SEQUENZPROTOKOLL

<110> Biosyn Arzneimittel GmbH

<120> Nukleinsäuremolekül, umfassend eine für ein Hämocyanin kodierende Nukleinsäuresequenz

<130> PCT1153-01966

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<170> PatentIn Ver. 2.1

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<212> DNA
<213> Haliotis tuberculata

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<213> Haliotis tuberculata

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<212> DNA
<213> Haliotis tuberculata

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<211> 1546
<212> DNA
<213> Haliotis tuberculata

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<210> 16
<211> 967
<212> DNA
<213> Megathura crenulata

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<210> 17
<211> 1242
<212> DNA
<213> Megathura crenulata

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<210> 18
<211> 1236
<212> DNA
<213> Megathura crenulata

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<210> 19
<211> 241
<212> DNA
<213> Megathura crenulata

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attcatctga tgggttccag gcaatcgctt ccttccatgc tcttcctcct ctttgtccat 180
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<210> 20
<211> 949
<212> DNA
<213> Megathura crenulata

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<210> 21
<211> 760
<212> DNA
<213> Megathura crenulata

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cgaccataag ggagagctcc caacgcgttg gatgcaatct 760

<210> 22
<211> 323
<212> DNA
<213> Megathura crenulata

<400> 22
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<212> DNA
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<210> 24
<211> 310
<212> DNA
<213> Megathura crenulata

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<210> 25
<211> 422
<212> PRT
<213> Haliotis tuberculata

<220>
<221> SIGNAL
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<400> 25

```
Leu Val Gln Phe Leu Leu Val Ala Leu Val Ala Gly Ala Gly Ala Asp
  1               5                  10                  15

Asn Val Val Arg Lys Asp Val Ser His Leu Thr Asp Asp Glu Val Gln
             20                  25                  30

Ala Leu His Gly Ala Leu His Asp Val Thr Ala Ser Thr Gly Pro Leu
         35                  40                  45

Ser Phe Glu Asp Ile Thr Ser Tyr His Ala Ala Pro Ala Ser Cys Asp
     50                  55                  60

Tyr Lys Gly Arg Lys Ile Ala Cys Cys Val His Gly Met Pro Ser Phe
 65                  70                  75                  80

Pro Phe Trp His Arg Ala Tyr Val Val Gln Ala Glu Arg Ala Leu Leu
                 85                  90                  95

Ser Lys Arg Lys Thr Val Gly Met Pro Tyr Trp Asp Trp Thr Gln Thr
            100                 105                 110

Leu Thr His Leu Pro Ser Leu Val Thr Glu Pro Ile Tyr Ile Asp Ser
        115                 120                 125

Lys Gly Gly Lys Ala Gln Thr Asn Tyr Trp Tyr Arg Gly Glu Ile Ala
    130                 135                 140

Phe Ile Asn Lys Lys Thr Ala Arg Ala Val Asp Asp Arg Leu Phe Glu
145                 150                 155                 160

Lys Val Glu Pro Gly His Tyr Thr His Leu Met Glu Thr Val Leu Asp
                165                 170                 175

Ala Leu Glu Gln Asp Glu Phe Cys Lys Phe Glu Ile Gln Phe Glu Leu
            180                 185                 190

Ala His Asn Ala Ile His Tyr Leu Val Gly Gly Lys Phe Glu Tyr Ser
        195                 200                 205

Met Ser Asn Leu Glu Tyr Thr Ser Tyr Asp Pro Ile Phe Phe Leu His
    210                 215                 220

His Ser Asn Val Asp Arg Leu Phe Ala Ile Trp Gln Arg Leu Gln Glu
225                 230                 235                 240
```

```
Leu Arg Gly Lys Asn Pro Asn Ala Met Asp Cys Ala His Glu Leu Ala
                245                 250                 255

His Gln Gln Leu Gln Pro Phe Asn Arg Asp Ser Asn Pro Val Gln Leu
            260                 265                 270

Thr Lys Asp His Ser Thr Pro Ala Asp Leu Phe Asp Tyr Lys Gln Leu
        275                 280                 285

Gly Tyr Ser Tyr Asp Ser Leu Asn Leu Asn Gly Met Thr Pro Glu Gln
    290                 295                 300

Leu Lys Thr Glu Leu Asp Glu Arg His Ser Lys Glu Arg Ala Phe Ala
305                 310                 315                 320

Ser Phe Arg Leu Ser Gly Phe Gly Gly Ser Ala Asn Val Val Val Tyr
                325                 330                 335

Ala Cys Val Pro Asp Asp Asp Pro Arg Ser Asp Asp Tyr Cys Glu Lys
            340                 345                 350

Ala Gly Asp Phe Phe Ile Leu Gly Gly Gln Ser Glu Met Pro Trp Arg
        355                 360                 365

Phe Tyr Arg Pro Phe Phe Tyr Asp Val Thr Glu Ala Val His His Leu
    370                 375                 380

Gly Val Pro Leu Ser Gly His Tyr Tyr Val Lys Thr Glu Leu Phe Ser
385                 390                 395                 400

Val Asn Gly Thr Ala Leu Ser Pro Asp Leu Leu Pro Gln Pro Thr Val
                405                 410                 415

Ala Tyr Arg Pro Gly Lys
            420
```

<210> 26
<211> 419
<212> PRT
<213> Haliotis tuberculata

<400> 26

```
Gly His Leu Asp Pro Pro Val His His Arg His Asp Asp Asp Leu Ile
  1               5                  10                  15

Val Arg Lys Asn Ile Asp His Leu Thr Arg Glu Glu Glu Tyr Glu Leu
            20                  25                  30

Arg Met Ala Leu Glu Arg Phe Gln Ala Asp Thr Ser Val Asp Gly Tyr
        35                  40                  45

Gln Ala Thr Val Glu Tyr His Gly Leu Pro Ala Arg Cys Pro Arg Pro
    50                  55                  60

Asp Ala Lys Val Arg Phe Ala Cys Cys Met His Gly Met Ala Ser Phe
65                  70                  75                  80
```

Pro His Trp His Arg Leu Phe Val Thr Gln Val Glu Asp Ala Leu Val
85 90 95

Arg Arg Gly Ser Pro Ile Gly Val Pro Tyr Trp Asp Trp Thr Lys Pro
100 105 110

Met Thr His Leu Pro Asp Leu Ala Ser Asn Glu Thr Tyr Val Asp Pro
115 120 125

Tyr Gly His Thr His His Asn Pro Phe Phe Asn Ala Asn Ile Ser Phe
130 135 140

Glu Glu Gly His His His Thr Ser Arg Met Ile Asp Ser Lys Leu Phe
145 150 155 160

Ala Pro Val Ala Phe Gly Glu His Ser His Leu Phe Asp Gly Ile Leu
165 170 175

Tyr Ala Phe Glu Gln Glu Asp Phe Cys Asp Phe Glu Ile Gln Phe Glu
180 185 190

Leu Val His Asn Ser Ile His Ala Trp Ile Gly Gly Ser Glu Asp Tyr
195 200 205

Ser Met Ala Thr Leu His Tyr Thr Ala Phe Asp Pro Ile Phe Tyr Leu
210 215 220

His His Ser Asn Val Asp Arg Leu Trp Ala Ile Trp Gln Ala Leu Gln
225 230 235 240

Ile Arg Arg His Lys Pro Tyr Gln Ala His Cys Ala Gln Ser Val Glu
245 250 255

Gln Leu Pro Met Lys Pro Phe Ala Phe Pro Ser Pro Leu Asn Asn Asn
260 265 270

Glu Lys Thr His Ser His Ser Val Pro Thr Asp Ile Tyr Asp Tyr Glu
275 280 285

Glu Val Leu His Tyr Ser Tyr Asp Asp Leu Thr Phe Gly Gly Met Asn
290 295 300

Leu Glu Glu Ile Glu Glu Ala Ile His Leu Arg Gln Gln His Glu Arg
305 310 315 320

Val Phe Ala Gly Phe Leu Leu Ala Gly Ile Gly Thr Ser Ala Leu Val
325 330 335

Asp Ile Phe Ile Asn Lys Pro Gly Asn Gln Pro Leu Lys Ala Gly Asp
340 345 350

Ile Ala Ile Leu Gly Gly Ala Lys Glu Met Pro Trp Ala Phe Asp Arg
355 360 365

Leu Tyr Lys Val Glu Ile Thr Asp Ser Leu Lys Thr Leu Ser Leu Asp
370 375 380

```
Val Asp Gly Asp Tyr Glu Val Thr Phe Lys Ile His Asp Met His Gly
385                 390                 395                 400

Asn Ala Leu Asp Thr Asp Leu Ile Pro His Ala Ala Val Val Ser Glu
                405                 410                 415

Pro Ala His
```

<210> 27
<211> 414
<212> PRT
<213> Haliotis tuberculata

<400> 27

```
Pro Thr Phe Glu Asp Glu Lys His Ser Leu Arg Ile Arg Lys Asn Val
  1               5                  10                  15

Asp Ser Leu Thr Pro Glu Glu Thr Asn Glu Leu Arg Lys Ala Leu Glu
             20                  25                  30

Leu Leu Glu Asn Asp His Thr Ala Gly Gly Phe Asn Gln Leu Gly Ala
         35                  40                  45

Phe His Gly Glu Pro Lys Trp Cys Pro Asn Pro Glu Ala Glu His Lys
     50                  55                  60

Val Ala Cys Cys Val His Gly Met Ala Val Phe Pro His Trp His Arg
 65                  70                  75                  80

Leu Leu Ala Leu Gln Ala Glu Asn Ala Leu Arg Lys His Gly Tyr Ser
                85                  90                  95

Gly Ala Leu Pro Tyr Trp Asp Trp Thr Arg Pro Leu Ser Gln Leu Pro
            100                 105                 110

Asp Leu Val Ser His Glu Gln Tyr Thr Asp Pro Ser Asp His His Val
        115                 120                 125

Lys His Asn Pro Trp Phe Asn Gly His Ile Asp Thr Val Asn Gln Asp
    130                 135                 140

Thr Thr Arg Ser Val Arg Glu Asp Leu Tyr Gln Gln Pro Glu Phe Gly
145                 150                 155                 160

His Phe Thr Asp Ile Ala Gln Gln Val Leu Leu Ala Leu Glu Gln Asp
                165                 170                 175

Asp Phe Cys Ser Phe Glu Val Gln Tyr Glu Ile Ser His Asn Phe Ile
            180                 185                 190

His Ala Leu Val Gly Gly Thr Asp Ala Tyr Gly Met Ala Ser Leu Arg
        195                 200                 205
```

```
Tyr Thr Ala Tyr Asp Pro Ile Phe Phe Leu His His Ser Asn Thr Asp
    210                 215                 220

Arg Ile Trp Ala Ile Trp Gln Ser Leu Gln Lys Tyr Arg Gly Lys Pro
225                 230                 235                 240

Tyr Asn Thr Ala Asn Cys Ala Ile Glu Ser Met Arg Arg Pro Leu Gln
                245                 250                 255

Pro Phe Gly Leu Ser Ser Ala Ile Asn Pro Asp Arg Ile Thr Arg Glu
            260                 265                 270

His Ala Ile Pro Phe Asp Val Phe Asn Tyr Arg Asp Asn Leu His Tyr
        275                 280                 285

Val Tyr Asp Thr Leu Glu Phe Asn Gly Leu Ser Ile Ser Gln Leu Asp
    290                 295                 300

Arg Glu Leu Glu Lys Ile Lys Ser His Glu Arg Val Phe Ala Gly Phe
305                 310                 315                 320

Leu Leu Ser Gly Ile Lys Lys Ser Ala Leu Val Lys Phe Glu Val Cys
                325                 330                 335

Thr Pro Pro Asp Asn Cys His Lys Ala Gly Glu Phe Tyr Leu Leu Gly
            340                 345                 350

Asp Glu Asn Glu Met Ala Trp Ala Tyr Asp Arg Leu Phe Lys Tyr Asp
        355                 360                 365

Ile Thr Gln Val Leu Glu Ala Asn His Leu His Phe Tyr Asp His Leu
    370                 375                 380

Phe Ile Arg Tyr Glu Val Phe Asp Leu Lys Gly Val Ser Leu Gly Thr
385                 390                 395                 400

Asp Leu Phe His Thr Ala Asn Val Val His Asp Ser Gly Thr
                405                 410


<210> 28
<211> 413
<212> PRT
<213> Haliotis tuberculata

<400> 28
Gly Thr Arg Asp Arg Asp Asn Tyr Val Glu Glu Val Thr Gly Ala Ser
  1               5                  10                  15

His Ile Arg Lys Asn Leu Asn Asp Leu Asn Thr Gly Glu Met Glu Ser
            20                  25                  30

Leu Arg Ala Ala Phe Leu His Ile Gln Asp Asp Gly Thr Tyr Glu Ser
        35                  40                  45

Ile Ala Gln Tyr His Gly Lys Pro Gly Lys Cys Gln Leu Asn Asp His
    50                  55                  60
```

Asn Ile Ala Cys Cys Val His Gly Met Pro Thr Phe Pro Gln Trp His
65 70 75 80

Arg Leu Tyr Val Val Gln Val Glu Asn Ala Leu Leu Asn Arg Gly Ser
85 90 95

Gly Val Ala Val Pro Tyr Trp Glu Trp Thr Ala Pro Ile Asp His Leu
100 105 110

Pro His Phe Ile Asp Asp Ala Thr Tyr Phe Asn Ser Arg Gln Gln Arg
115 120 125

Tyr Asp Pro Asn Pro Phe Phe Arg Gly Lys Val Thr Phe Glu Asn Ala
130 135 140

Val Thr Thr Arg Asp Pro Gln Ala Gly Leu Phe Asn Ser Asp Tyr Met
145 150 155 160

Tyr Glu Asn Val Leu Leu Ala Leu Glu Gln Glu Asn Tyr Cys Asp Phe
165 170 175

Glu Ile Gln Phe Glu Leu Val His Asn Ala Leu His Ser Met Leu Gly
180 185 190

Gly Lys Gly Gln Tyr Ser Met Ser Ser Leu Asp Tyr Ser Ala Phe Asp
195 200 205

Pro Val Phe Phe Leu His His Ala Asn Thr Asp Arg Leu Trp Ala Ile
210 215 220

Trp Gln Glu Leu Gln Arg Phe Arg Glu Leu Pro Tyr Glu Glu Ala Asn
225 230 235 240

Cys Ala Ile Asn Leu Met His Gln Pro Leu Lys Pro Phe Ser Asp Pro
245 250 255

His Glu Asn His Asp Asn Val Thr Leu Lys Tyr Ser Lys Pro Gln Asp
260 265 270

Gly Phe Asp Tyr Gln Asn His Phe Gly Tyr Lys Tyr Asp Asn Leu Glu
275 280 285

Phe His His Leu Ser Ile Pro Ser Leu Asp Ala Thr Leu Lys Gln Arg
290 295 300

Arg Asn His Asp Arg Val Phe Ala Gly Phe Leu Leu His Asn Ile Gly
305 310 315 320

Thr Ser Ala Asp Ile Thr Ile Tyr Ile Cys Leu Pro Asp Gly Arg Arg
325 330 335

Gly Asn Asp Cys Ser His Glu Ala Gly Thr Phe Tyr Ile Leu Gly Gly
340 345 350

Glu Thr Glu Met Pro Phe Ile Phe Asp Arg Leu Tyr Lys Phe Glu Ile
355 360 365

Thr Lys Pro Leu Gln Gln Leu Gly Val Lys Leu His Gly Gly Val Phe
370 375 380

Glu Leu Glu Leu Glu Ile Lys Ala Tyr Asn Gly Ser Tyr Leu Asp Pro
385 390 395 400

His Thr Phe Asp Pro Thr Ile Ile Phe Glu Pro Gly Thr
405 410

<210> 29
<211> 420
<212> PRT
<213> Haliotis tuberculata

<400> 29
Asp Thr His Ile Leu Asp His Asp His Glu Glu Glu Ile Leu Val Arg
1 5 10 15

Lys Asn Ile Ile Asp Leu Ser Pro Arg Glu Arg Val Ser Leu Val Lys
20 25 30

Ala Leu Gln Arg Met Lys Asn Asp Arg Ser Ala Asp Gly Tyr Gln Ala
35 40 45

Ile Ala Ser Phe His Ala Leu Pro Pro Leu Cys Pro Asn Pro Ser Ala
50 55 60

Ala His Arg Tyr Ala Cys Cys Val His Gly Met Ala Thr Phe Pro Gln
65 70 75 80

Trp His Arg Leu Tyr Thr Val Gln Val Gln Asp Ala Leu Arg Arg His
85 90 95

Gly Ser Leu Val Gly Ile Pro Tyr Trp Asp Trp Thr Lys Pro Val Asn
100 105 110

Glu Leu Pro Glu Leu Leu Ser Ser Ala Thr Phe Tyr His Pro Ile Arg
115 120 125

Asn Ile Asn Ile Ser Asn Pro Phe Leu Gly Ala Asp Ile Glu Phe Glu
130 135 140

Gly Pro Gly Val His Thr Glu Arg His Ile Asn Thr Glu Arg Leu Phe
145 150 155 160

His Ser Gly Asp His Asp Gly Tyr His Asn Trp Phe Phe Glu Thr Val
165 170 175

Leu Phe Ala Leu Glu Gln Glu Asp Tyr Cys Asp Phe Glu Ile Gln Phe
180 185 190

Glu Ile Ala His Asn Gly Ile His Thr Trp Ile Gly Gly Ser Ala Val
195 200 205

```
Tyr Gly Met Gly His Leu His Tyr Ala Ser Tyr Asp Pro Ile Phe Tyr
    210                 215                 220

Ile His His Ser Gln Thr Asp Arg Ile Trp Ala Ile Trp Gln Glu Leu
225                 230                 235                 240

Gln Lys Tyr Arg Gly Leu Ser Gly Ser Glu Ala Asn Cys Ala Ile Glu
                245                 250                 255

His Met Arg Thr Pro Leu Lys Pro Phe Ser Phe Gly Pro Pro Tyr Asn
            260                 265                 270

Leu Asn Ser His Thr Gln Glu Tyr Ser Lys Pro Glu Asp Thr Phe Asp
        275                 280                 285

Tyr Lys Lys Phe Gly Tyr Arg Tyr Asp Ser Leu Glu Leu Glu Gly Arg
    290                 295                 300

Ser Ile Ser Arg Ile Asp Glu Leu Ile Gln Gln Arg Gln Glu Lys Asp
305                 310                 315                 320

Arg Thr Phe Ala Gly Phe Leu Leu Lys Gly Phe Gly Thr Ser Ala Ser
                325                 330                 335

Val Ser Leu Gln Val Cys Arg Val Asp His Thr Cys Lys Asp Ala Gly
            340                 345                 350

Tyr Phe Thr Ile Leu Gly Gly Ser Ala Glu Met Pro Trp Ala Phe Asp
        355                 360                 365

Arg Leu Tyr Lys Tyr Asp Ile Thr Lys Thr Leu His Asp Met Asn Leu
    370                 375                 380

Arg His Glu Asp Thr Phe Ser Ile Asp Val Thr Ile Thr Ser Tyr Asn
385                 390                 395                 400

Gly Thr Val Leu Ser Gly Asp Leu Ile Gln Thr Pro Ser Ile Ile Phe
                405                 410                 415

Val Pro Gly Arg
            420
```

<210> 30
<211> 417
<212> PRT
<213> Haliotis tuberculata

<400> 30

```
His Lys Leu Asn Ser Arg Lys His Thr Pro Asn Arg Val Arg His Glu
  1               5                  10                  15

Leu Ser Ser Leu Ser Ser Arg Asp Ile Ala Ser Leu Lys Ala Ala Leu
             20                  25                  30

Thr Ser Leu Gln His Asp Asn Gly Thr Asp Gly Tyr Gln Ala Ile Ala
         35                  40                  45
```

```
Ala Phe His Gly Val Pro Ala Gln Cys His Glu Pro Ser Gly Arg Glu
     50                  55                  60

Ile Ala Cys Cys Ile His Gly Met Ala Thr Phe Pro His Trp His Arg
 65                  70                  75                  80

Leu Tyr Thr Leu Gln Leu Glu Gln Ala Leu Arg Arg His Gly Ser Ser
                 85                  90                  95

Val Ala Val Pro Tyr Trp Asp Trp Thr Lys Pro Ile Thr Glu Leu Pro
            100                 105                 110

His Ile Leu Thr Asp Gly Glu Tyr Tyr Asp Val Trp Gln Asn Ala Val
        115                 120                 125

Leu Ala Asn Pro Phe Ala Arg Gly Tyr Val Lys Ile Lys Asp Ala Phe
    130                 135                 140

Thr Val Arg Asn Val Gln Glu Ser Leu Phe Lys Met Ser Ser Phe Gly
145                 150                 155                 160

Lys His Ser Leu Leu Phe Asp Gln Ala Leu Leu Ala Leu Glu Gln Thr
                165                 170                 175

Asp Tyr Cys Asp Phe Glu Val Gln Phe Glu Val Met His Asn Thr Ile
            180                 185                 190

His Tyr Leu Val Gly Gly Arg Gln Thr Tyr Ala Phe Ser Ser Leu Glu
        195                 200                 205

Tyr Ser Ser Tyr Asp Pro Ile Phe Phe Ile His His Ser Phe Val Asp
    210                 215                 220

Lys Ile Trp Ala Val Trp Gln Glu Leu Gln Ser Arg Arg His Leu Gln
225                 230                 235                 240

Phe Arg Thr Ala Asp Cys Ala Val Gly Leu Met Gly Gln Ala Met Arg
                245                 250                 255

Pro Phe Asn Lys Asp Phe Asn His Asn Ser Phe Thr Lys Lys His Ala
            260                 265                 270

Val Pro Asn Thr Val Phe Asp Tyr Glu Asp Leu Gly Tyr Asn Tyr Asp
        275                 280                 285

Asn Leu Glu Ile Ser Gly Leu Asn Leu Asn Glu Ile Glu Ala Leu Ile
    290                 295                 300

Ala Lys Arg Lys Ser His Ala Arg Val Phe Ala Gly Phe Leu Leu Phe
305                 310                 315                 320

Gly Leu Gly Thr Ser Ala Asp Ile His Leu Glu Ile Cys Lys Thr Ser
                325                 330                 335

Glu Asn Cys His Asp Ala Gly Val Ile Phe Ile Leu Gly Gly Ser Ala
            340                 345                 350
```

```
Glu Met His Trp Ala Tyr Asn Arg Leu Tyr Lys Tyr Asp Ile Thr Glu
        355                 360                 365

Ala Leu Gln Glu Phe Asp Ile Asn Pro Glu Asp Val Phe His Ala Asp
    370                 375                 380

Glu Pro Phe Phe Leu Arg Leu Ser Val Val Ala Val Asn Gly Thr Val
385                 390                 395                 400

Ile Pro Ser Ser His Leu His Gln Pro Thr Ile Ile Tyr Glu Pro Gly
                405                 410                 415

Glu
```

<210> 31
<211> 403
<212> PRT
<213> Haliotis tuberculata

<400> 31

```
Asp His His Asp Asp His Gln Ser Gly Ser Ile Ala Gly Ser Gly Val
  1               5                  10                  15

Arg Lys Asp Val Asn Thr Leu Thr Lys Ala Glu Thr Asp Asn Leu Arg
            20                  25                  30

Glu Ala Leu Trp Gly Val Met Ala Asp His Gly Pro Asn Gly Phe Gln
        35                  40                  45

Ala Ile Ala Ala Phe His Gly Lys Pro Ala Leu Cys Pro Met Pro Asp
    50                  55                  60

Gly His Asn Tyr Ser Cys Cys Thr His Gly Met Ala Thr Phe Pro His
65                  70                  75                  80

Trp His Arg Leu Tyr Thr Lys Gln Met Glu Asp Ala Met Arg Ala His
                85                  90                  95

Gly Ser His Val Gly Leu Pro Tyr Trp Asp Trp Thr Ala Ala Phe Thr
            100                 105                 110

His Leu Pro Thr Leu Val Thr Asp Thr Asp Asn Asn Pro Phe Gln His
        115                 120                 125

Gly His Ile Asp Tyr Leu Asn Val Ser Thr Thr Arg Ser Pro Arg Asp
    130                 135                 140

Met Leu Phe Asn Asp Pro Glu His Gly Ser Glu Ser Phe Phe Tyr Arg
145                 150                 155                 160

Gln Val Leu Leu Ala Leu Glu Gln Thr Asp Phe Cys Lys Phe Glu Val
                165                 170                 175
```

```
Gln Phe Glu Ile Thr His Asn Ala Ile His Ser Trp Thr Gly Gly His
            180                 185                 190

Ser Pro Tyr Gly Met Ser Thr Leu Asp Phe Thr Ala Tyr Asp Pro Leu
        195                 200                 205

Phe Trp Leu His His Ser Asn Thr Asp Arg Ile Trp Ala Val Trp Gln
    210                 215                 220

Ala Leu Gln Glu Tyr Arg Gly Leu Pro Tyr Asn His Ala Asn Cys Glu
225                 230                 235                 240

Ile Gln Ala Met Lys Thr Pro Leu Arg Pro Phe Ser Asp Asp Ile Asn
                245                 250                 255

His Asn Pro Val Thr Lys Ala Asn Ala Lys Pro Leu Asp Val Phe Glu
            260                 265                 270

Tyr Asn Arg Leu Ser Phe Gln Tyr Asp Asn Leu Ile Phe His Gly Tyr
        275                 280                 285

Ser Ile Pro Glu Leu Asp Arg Val Leu Glu Glu Arg Lys Glu Glu Asp
    290                 295                 300

Arg Ile Phe Ala Ala Phe Leu Leu Ser Gly Ile Lys Arg Ser Ala Asp
305                 310                 315                 320

Val Val Phe Asp Ile Cys Gln Pro Glu His Glu Cys Val Phe Ala Gly
                325                 330                 335

Thr Phe Ala Ile Leu Gly Gly Glu Leu Glu Met Pro Trp Ser Phe Asp
            340                 345                 350

Arg Leu Phe Arg Tyr Asp Ile Thr Lys Val Met Lys Gln Leu His Leu
        355                 360                 365

Arg His Asp Ser Asp Phe Thr Phe Arg Val Lys Ile Val Gly Thr Asp
    370                 375                 380

Asp His Glu Leu Pro Ser Asp Ser Val Lys Ala Pro Thr Ile Glu Phe
385                 390                 395                 400

Glu Pro Gly
```

<210> 32
<211> 511
<212> PRT
<213> Haliotis tuberculata

<400> 32

```
Val His Arg Gly Gly Asn His Glu Asp Glu His His Asp Asp Arg Leu
  1               5                  10                  15

Ala Asp Val Leu Ile Arg Lys Glu Val Asp Phe Leu Ser Leu Gln Glu
             20                  25                  30
```

```
Ala Asn Ala Ile Lys Asp Ala Leu Tyr Lys Leu Gln Asn Asp Asp Ser
          35                  40                  45

Lys Gly Gly Phe Glu Ala Ile Ala Gly Tyr His Gly Tyr Pro Asn Met
      50                  55                  60

Cys Pro Glu Arg Gly Thr Asp Lys Tyr Pro Cys Cys Val His Gly Met
 65                  70                  75                  80

Pro Val Phe Pro His Trp His Arg Leu His Thr Ile Gln Met Glu Arg
                 85                  90                  95

Ala Leu Lys Asn His Gly Ser Pro Met Gly Ile Pro Tyr Trp Asp Trp
            100                 105                 110

Thr Lys Lys Met Ser Ser Leu Pro Ser Phe Phe Gly Asp Ser Ser Asn
        115                 120                 125

Asn Asn Pro Phe Tyr Lys Tyr Tyr Ile Arg Gly Val Gln His Glu Thr
    130                 135                 140

Thr Arg Asp Val Asn Gln Arg Leu Phe Asn Gln Thr Lys Phe Gly Glu
145                 150                 155                 160

Phe Asp Tyr Leu Tyr Tyr Leu Thr Leu Gln Val Leu Glu Glu Asn Ser
                165                 170                 175

Tyr Cys Asp Phe Glu Val Gln Tyr Glu Ile Leu His Asn Ala Val His
            180                 185                 190

Ser Trp Leu Gly Gly Thr Gly Gln Tyr Ser Met Ser Thr Leu Glu Tyr
        195                 200                 205

Ser Ala Phe Asp Pro Val Phe Met Ile His His Ser Ser Leu Asp Arg
    210                 215                 220

Ile Trp Ile Leu Trp Gln Lys Leu Gln Lys Ile Arg Met Lys Pro Tyr
225                 230                 235                 240

Tyr Ala Leu Asp Cys Ala Gly Asp Arg Leu Met Lys Asp Pro Leu His
                245                 250                 255

Pro Phe Asn Tyr Glu Thr Val Asn Glu Asp Glu Phe Thr Arg Ile Asn
            260                 265                 270

Ser Phe Pro Ser Ile Leu Phe Asp His Tyr Arg Phe Asn Tyr Glu Tyr
        275                 280                 285

Asp Asn Met Arg Ile Arg Gly Gln Asp Ile His Glu Leu Glu Glu Val
    290                 295                 300

Ile Gln Glu Leu Arg Asn Lys Asp Arg Ile Phe Ala Gly Phe Val Leu
305                 310                 315                 320

Ser Gly Leu Arg Ile Ser Ala Thr Val Lys Val Phe Ile His Ser Lys
                325                 330                 335
```

```
Asn Asp Thr Ser His Glu Glu Tyr Ala Gly Glu Phe Ala Val Leu Gly
            340                 345                 350

Gly Glu Lys Glu Met Pro Trp Ala Tyr Glu Arg Met Leu Lys Leu Asp
        355                 360                 365

Ile Ser Asp Ala Val His Lys Leu His Val Lys Asp Glu Asp Ile Arg
    370                 375                 380

Phe Arg Val Val Val Thr Ala Tyr Asn Gly Asp Val Val Thr Thr Arg
385                 390                 395                 400

Leu Ser Gln Pro Phe Ile Val His Arg Pro Ala His Val Ala His Asp
                405                 410                 415

Ile Leu Val Ile Pro Val Gly Ala Gly His Asp Leu Pro Pro Lys Val
            420                 425                 430

Val Val Lys Ser Gly Thr Lys Val Glu Phe Thr Pro Ile Asp Ser Ser
        435                 440                 445

Val Asn Lys Ala Met Val Glu Leu Gly Ser Tyr Thr Ala Met Ala Lys
    450                 455                 460

Cys Ile Val Pro Pro Phe Ser Tyr His Gly Phe Glu Leu Asp Lys Val
465                 470                 475                 480

Tyr Ser Val Asp His Gly Asp Tyr Tyr Ile Ala Ala Gly Thr His Ala
                485                 490                 495

Leu Cys Glu Gln Asn Leu Arg Leu His Ile His Val Glu His Glu
            500                 505                 510
```

<210> 33
<211> 334
<212> PRT
<213> Haliotis tuberculata

```
<400> 33
His Arg Leu Phe Val Thr Gln Val Glu Asp Ala Leu Ile Arg Arg Gly
  1               5                  10                  15

Ser Pro Ile Gly Val Pro Tyr Trp Asp Trp Thr Gln Pro Met Ala His
             20                  25                  30

Leu Pro Gly Leu Ala Asp Asn Ala Thr Tyr Arg Asp Pro Ile Ser Gly
         35                  40                  45

Asp Ser Arg His Asn Pro Phe His Asp Val Glu Val Ala Phe Glu Asn
     50                  55                  60

Gly Arg Thr Glu Arg His Pro Asp Ser Arg Leu Phe Glu Gln Pro Leu
 65                  70                  75                  80
```

```
Phe Gly Lys His Thr Arg Leu Phe Asp Ser Ile Val Tyr Ala Phe Glu
                 85                  90                  95

Gln Glu Asp Phe Cys Asp Phe Glu Val Gln Phe Glu Met Thr His Asn
            100                 105                 110

Asn Ile His Ala Trp Ile Gly Gly Gly Glu Lys Tyr Ser Met Ser Ser
        115                 120                 125

Leu His Tyr Thr Ala Phe Asp Pro Ile Phe Tyr Leu Arg His Ser Asn
    130                 135                 140

Thr Asp Arg Leu Trp Ala Ile Trp Gln Ala Leu Gln Ile Arg Arg Asn
145                 150                 155                 160

Arg Pro Tyr Lys Ala His Cys Ala Trp Ser Glu Glu Arg Gln Pro Leu
                165                 170                 175

Lys Pro Phe Ala Phe Ser Ser Pro Leu Asn Asn Asn Glu Lys Thr Tyr
            180                 185                 190

Glu Asn Ser Val Pro Thr Asn Val Tyr Asp Tyr Glu Gly Val Leu Gly
        195                 200                 205

Tyr Thr Tyr Asp Asp Leu Asn Phe Gly Gly Met Asp Leu Gly Gln Leu
    210                 215                 220

Glu Glu Tyr Ile Gln Arg Gln Arg Gln Arg Asp Arg Thr Phe Ala Gly
225                 230                 235                 240

Phe Phe Leu Ser His Ile Gly Thr Ser Ala Asn Val Glu Ile Ile Ile
                245                 250                 255

Asp His Gly Thr Leu His Thr Ser Val Gly Thr Phe Ala Val Leu Gly
            260                 265                 270

Gly Glu Lys Glu Met Lys Trp Gly Phe Asp Arg Leu Tyr Lys Tyr Glu
        275                 280                 285

Ile Thr Asp Glu Leu Arg Gln Leu Asn Leu Arg Ala Asp Asp Val Phe
    290                 295                 300

Ser Ile Ser Val Lys Val Thr Asp Val Asp Gly Ser Glu Leu Ser Ser
305                 310                 315                 320

Glu Leu Ile Pro Ser Ala Ala Ile Ile Phe Glu Arg Ser His
                325                 330
```

<210> 34
<211> 417
<212> PRT
<213> Haliotis tuberculata

<400> 34

```
Ile Asp His Gln Asp Pro His His Asp Thr Ile Ile Arg Lys Asn Val
  1               5                  10                  15
```

```
Asp Asn Leu Thr Pro Glu Glu Ile Asn Ser Leu Arg Arg Ala Met Ala
            20                  25                  30

Asp Leu Gln Ser Asp Lys Thr Ala Gly Gly Phe Gln Gln Ile Ala Ala
        35                  40                  45

Phe His Gly Glu Pro Lys Trp Cys Pro Ser Pro Asp Ala Glu Lys Lys
    50                  55                  60

Phe Ser Cys Cys Val His Gly Met Ala Val Phe Pro His Trp His Arg
65                  70                  75                  80

Leu Leu Thr Val Gln Gly Glu Asn Ala Leu Arg Lys His Gly Cys Leu
                85                  90                  95

Gly Ala Leu Pro Tyr Trp Asp Trp Thr Arg Pro Leu Ser His Leu Pro
            100                 105                 110

Asp Leu Val Leu Val Ser Ser Arg Thr Thr Pro Met Pro Tyr Ser Thr
        115                 120                 125

Val Glu Ala Arg Asn Pro Trp Tyr Ser Gly His Ile Asp Thr Val Gly
    130                 135                 140

Val Asp Thr Thr Arg Ser Val Arg Gln Glu Leu Tyr Glu Ala Pro Gly
145                 150                 155                 160

Phe Gly His Tyr Thr Gly Val Ala Lys Gln Val Leu Leu Ala Leu Glu
                165                 170                 175

Gln Asp Asp Phe Cys Asp Phe Glu Val Gln Phe Glu Ile Ala His Asn
            180                 185                 190

Phe Ile His Ala Leu Val Gly Gly Ser Glu Pro Tyr Gly Met Ala Ser
        195                 200                 205

Leu Arg Tyr Thr Thr Tyr Asp Pro Ile Phe Tyr Leu His His Ser Asn
    210                 215                 220

Thr Asp Arg Leu Trp Ala Ile Trp Gln Ala Leu Gln Lys Tyr Arg Gly
225                 230                 235                 240

Lys Pro Tyr Asn Ser Ala Asn Cys Ala Ile Ala Ser Met Arg Lys Pro
                245                 250                 255

Leu Gln Pro Phe Gly Leu Thr Asp Glu Ile Asn Pro Asp Asp Glu Thr
            260                 265                 270

Arg Gln His Ala Val Pro Phe Ser Val Phe Asp Tyr Lys Asn Asn Phe
        275                 280                 285

Asn Tyr Glu Tyr Asp Thr Leu Asp Phe Asn Gly Leu Ser Ile Ser Gln
    290                 295                 300

Leu Asp Arg Glu Leu Ser Arg Arg Lys Ser His Asp Arg Val Phe Ala
305                 310                 315                 320
```

Gly Phe Leu Leu His Gly Ile Gln Gln Ser Ala Leu Val Lys Phe Phe
325 330 335

Val Cys Lys Ser Asp Asp Asp Cys Asp His Tyr Ala Gly Glu Phe Tyr
340 345 350

Ile Leu Gly Asp Glu Ala Glu Met Pro Trp Gly Tyr Asp Arg Leu Tyr
355 360 365

Lys Tyr Glu Ile Thr Glu Gln Leu Asn Ala Leu Asp Leu His Ile Gly
370 375 380

Asp Arg Phe Phe Ile Arg Tyr Glu Ala Phe Asp Leu His Gly Thr Ser
385 390 395 400

Leu Gly Ser Asn Ile Phe Pro Lys Pro Ser Val Ile His Asp Glu Gly
405 410 415

Ala

<210> 35
<211> 415
<212> PRT
<213> Haliotis tuberculata

<400> 35
Gly His His Gln Ala Asp Glu Tyr Asp Glu Val Val Thr Ala Ala Ser
1 5 10 15

His Ile Arg Lys Asn Leu Lys Asp Leu Ser Lys Gly Glu Val Glu Ser
20 25 30

Leu Arg Ser Ala Phe Leu Gln Leu Gln Asn Asp Gly Val Tyr Glu Asn
35 40 45

Ile Ala Lys Phe His Gly Lys Pro Gly Leu Cys Asp Asp Asn Gly Arg
50 55 60

Lys Val Ala Cys Cys Val His Gly Met Pro Thr Phe Pro Gln Trp His
65 70 75 80

Arg Leu Tyr Val Leu Gln Val Glu Asn Ala Leu Leu Glu Arg Gly Ser
85 90 95

Ala Val Ser Val Pro Tyr Trp Asp Trp Thr Glu Thr Phe Thr Glu Leu
100 105 110

Pro Ser Leu Ile Ala Glu Ala Thr Tyr Phe Asn Ser Arg Gln Gln Thr
115 120 125

Phe Asp Pro Asn Pro Phe Phe Arg Gly Lys Ile Ser Phe Glu Asn Ala
130 135 140

Val Thr Thr Arg Asp Pro Gln Pro Glu Leu Tyr Val Asn Arg Tyr Tyr
145 150 155 160

Tyr Gln Asn Val Met Leu Val Phe Glu Gln Asp Asn Tyr Cys Asp Phe
165 170 175

Glu Ile Gln Phe Glu Met Val His Asn Val Leu His Ala Trp Leu Gly
180 185 190

Gly Arg Ala Thr Tyr Ser Ile Ser Ser Leu Asp Tyr Ser Ala Phe Asp
195 200 205

Pro Val Phe Phe Leu His His Ala Asn Thr Asp Arg Leu Trp Ala Ile
210 215 220

Trp Gln Glu Leu Gln Arg Tyr Arg Lys Lys Pro Tyr Asn Glu Ala Asp
225 230 235 240

Cys Ala Ile Asn Leu Met Arg Lys Pro Leu His Pro Phe Asp Asn Ser
245 250 255

Asp Leu Asn His Asp Pro Val Thr Phe Lys Tyr Ser Lys Pro Thr Asp
260 265 270

Gly Phe Asp Tyr Gln Asn Asn Phe Gly Tyr Lys Tyr Asp Asn Leu Glu
275 280 285

Phe Asn His Phe Ser Ile Pro Arg Leu Glu Glu Ile Ile Arg Ile Arg
290 295 300

Gln Arg Gln Asp Arg Val Phe Ala Gly Phe Leu Leu His Asn Ile Gly
305 310 315 320

Thr Ser Ala Thr Val Glu Ile Phe Val Cys Val Pro Thr Thr Ser Gly
325 330 335

Glu Gln Asn Cys Glu Asn Lys Ala Gly Thr Phe Ala Val Leu Gly Gly
340 345 350

Glu Thr Glu Met Ala Phe His Phe Asp Arg Leu Tyr Arg Phe Asp Ile
355 360 365

Ser Glu Thr Leu Arg Asp Leu Gly Ile Gln Leu Asp Ser His Asp Phe
370 375 380

Asp Leu Ser Ile Lys Ile Gln Gly Val Asn Gly Ser Tyr Leu Asp Pro
385 390 395 400

His Ile Leu Pro Glu Pro Ser Leu Ile Phe Val Pro Gly Ser Ser
405 410 415

<210> 36
<211> 418
<212> PRT
<213> Haliotis tuberculata

<400> 36

Ser Phe Leu Arg Pro Asp Gly His Ser Asp Asp Ile Leu Val Arg Lys
1 5 10 15

Glu Val Asn Ser Leu Thr Thr Arg Glu Thr Ala Ser Leu Ile His Ala
20 25 30

Leu Lys Ser Met Gln Glu Asp His Ser Pro Asp Gly Phe Gln Ala Ile
35 40 45

Ala Ser Phe His Ala Leu Pro Pro Leu Cys Pro Ser Pro Ser Ala Ala
50 55 60

His Arg Tyr Ala Cys Cys Val His Gly Met Ala Thr Phe Pro Gln Trp
65 70 75 80

His Arg Leu Tyr Thr Val Gln Phe Gln Asp Ala Leu Arg Arg His Gly
85 90 95

Ala Thr Val Gly Val Pro Tyr Trp Asp Trp Leu Arg Pro Gln Ser His
100 105 110

Leu Pro Glu Leu Val Thr Met Glu Thr Tyr His Asp Ile Trp Ser Asn
115 120 125

Arg Asp Phe Pro Asn Pro Phe Tyr Gln Ala Asn Ile Glu Phe Glu Gly
130 135 140

Glu Asn Ile Thr Thr Glu Arg Glu Val Ile Ala Asp Lys Leu Phe Val
145 150 155 160

Lys Gly Gly His Val Phe Asp Lys Leu Val Leu Gln Thr Ser His Pro
165 170 175

Ser Ala Glu Gln Glu Asn Tyr Cys Asp Phe Glu Ile Gln Phe Glu Ile
180 185 190

Leu His Asn Gly Val His Thr Trp Val Gly Gly Ser Arg Thr Tyr Ser
195 200 205

Ile Gly His Leu His Tyr Ala Phe Tyr Asp Pro Leu Phe Tyr Leu His
210 215 220

His Phe Gln Thr Asp Arg Ile Trp Ala Ile Trp Gln Glu Leu Gln Glu
225 230 235 240

Gln Arg Gly Leu Ser Gly Asp Glu Ala His Cys Ala Leu Glu Gln Met
245 250 255

Arg Glu Pro Leu Lys Pro Phe Ser Phe Gly Ala Pro Tyr Asn Trp Asn
260 265 270

Gln Leu Thr Gln Asp Phe Ser Arg Pro Glu Asp Thr Phe Asp Tyr Arg
275 280 285

Lys Phe Gly Tyr Glu Tyr Asp Asn Leu Glu Phe Leu Gly Met Ser Val
290 295 300

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Ala Glu Leu Asp Gln Tyr Ile Ile Glu His Gln Glu Asn Asp Arg Val
305                 310                 315                 320

Phe Ala Gly Phe Leu Leu Ser Gly Phe Gly Gly Ser Ala Ser Val Asn
                325                 330                 335

Phe Gln Val Cys Arg Ala Asp Ser Thr Cys Gln Asp Ala Gly Tyr Phe
            340                 345                 350

Thr Val Leu Gly Gly Ser Ala Glu Met Ala Trp Ala Phe Asp Arg Leu
        355                 360                 365

Tyr Lys Tyr Asp Ile Thr Glu Thr Leu Glu Lys Met His Leu Arg Tyr
    370                 375                 380

Asp Asp Asp Phe Thr Ile Ser Val Ser Leu Thr Ala Asn Asn Gly Thr
385                 390                 395                 400

Val Leu Ser Ser Ser Leu Ile Pro Thr Pro Ser Val Ile Phe Gln Arg
                405                 410                 415

Gly His
```

<210> 37
<211> 416
<212> PRT
<213> Haliotis tuberculata

<400> 37

```
Arg Asp Ile Asn Thr Arg Ser Met Ser Pro Asn Arg Val Arg Arg Glu
  1               5                  10                  15

Leu Ser Asp Leu Ser Ala Arg Asp Leu Ser Ser Leu Lys Ser Ala Leu
             20                  25                  30

Arg Asp Leu Gln Glu Asp Asp Gly Pro Asn Gly Tyr Gln Ala Leu Ala
         35                  40                  45

Ala Phe His Gly Leu Pro Ala Gly Cys His Asp Ser Arg Gly Asn Glu
     50                  55                  60

Ile Ala Cys Cys Ile His Gly Met Pro Thr Phe Pro Gln Trp His Arg
 65                  70                  75                  80

Leu Tyr Thr Leu Gln Leu Glu Met Ala Leu Arg Arg His Gly Ser Ser
                85                  90                  95

Val Ala Ile Pro Tyr Trp Asp Trp Thr Lys Pro Ile Ser Glu Leu Pro
            100                 105                 110

Ser Leu Phe Thr Ser Pro Glu Tyr Tyr Asp Pro Trp His Asp Ala Val
        115                 120                 125
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Val Asn Asn Pro Phe Ser Lys Gly Phe Val Lys Phe Ala Asn Thr Tyr
    130                 135                 140

Thr Val Arg Asp Pro Gln Glu Met Leu Phe Gln Leu Cys Glu His Gly
145                 150                 155                 160

Glu Ser Ile Leu Tyr Glu Gln Thr Leu Leu Ala Leu Glu Gln Thr Asp
                165                 170                 175

Tyr Cys Asp Phe Glu Val Gln Phe Glu Val Leu His Asn Val Ile His
            180                 185                 190

Tyr Leu Val Gly Gly Arg Gln Thr Tyr Ala Leu Ser Ser Leu His Tyr
        195                 200                 205

Ala Ser Tyr Asp Pro Phe Phe Phe Ile His His Ser Phe Val Asp Lys
    210                 215                 220

Met Trp Val Val Trp Gln Ala Leu Gln Lys Arg Arg Lys Leu Pro Tyr
225                 230                 235                 240

Lys Arg Ala Asp Cys Ala Val Asn Leu Met Thr Lys Pro Met Arg Pro
                245                 250                 255

Phe Asp Ser Asp Met Asn Gln Asn Pro Phe Thr Lys Met His Ala Val
            260                 265                 270

Pro Asn Thr Leu Tyr Asp Tyr Glu Thr Leu Tyr Tyr Ser Tyr Asp Asn
        275                 280                 285

Leu Glu Ile Gly Gly Arg Asn Leu Asp Gln Leu Gln Ala Glu Ile Asp
    290                 295                 300

Arg Ser Arg Ser His Asp Arg Val Phe Ala Gly Phe Leu Leu Arg Gly
305                 310                 315                 320

Ile Gly Thr Ser Ala Asp Val Arg Phe Trp Ile Cys Arg Asn Glu Asn
                325                 330                 335

Asp Cys His Arg Gly Gly Ile Ile Phe Ile Leu Gly Gly Ala Lys Glu
            340                 345                 350

Met Pro Trp Ser Phe Asp Arg Asn Phe Lys Phe Asp Ile Thr His Val
        355                 360                 365

Leu Glu Asn Ala Gly Ile Ser Pro Glu Asp Val Phe Asp Ala Glu Glu
    370                 375                 380

Pro Phe Tyr Ile Lys Val Glu Ile His Ala Val Asn Lys Thr Met Ile
385                 390                 395                 400

Pro Ser Ser Val Ile Pro Ala Pro Thr Ile Ile Tyr Ser Pro Gly Glu
                405                 410                 415
```

<210> 38
<211> 402
<212> PRT
<213> Haliotis tuberculata

<400> 38
Gly Arg Ala Ala Asp Ser Ala His Ser Ala Asn Ile Ala Gly Ser Gly
1 5 10 15

Val Arg Lys Asp Val Thr Thr Leu Thr Val Ser Glu Thr Glu Asn Leu
20 25 30

Arg Gln Ala Leu Gln Gly Val Ile Asp Asp Thr Gly Pro Asn Gly Tyr
35 40 45

Gln Ala Ile Ala Ser Phe His Gly Ser Pro Pro Met Cys Glu Met Asn
50 55 60

Gly Arg Lys Val Ala Cys Cys Ala His Gly Met Ala Ser Phe Pro His
65 70 75 80

Trp His Arg Leu Tyr Val Lys Gln Met Glu Asp Ala Leu Ala Asp His
85 90 95

Gly Ser His Ile Gly Ile Pro Tyr Trp Asp Trp Thr Thr Ala Phe Thr
100 105 110

Glu Leu Pro Ala Leu Val Thr Asp Ser Glu Asn Asn Pro Phe His Glu
115 120 125

Gly Arg Ile Asp His Leu Gly Val Thr Thr Ser Arg Ser Pro Arg Asp
130 135 140

Met Leu Phe Asn Asp Pro Glu Gln Gly Ser Glu Ser Phe Phe Tyr Arg
145 150 155 160

Gln Val Leu Leu Ala Leu Glu Gln Thr Asp Tyr Cys Gln Phe Glu Val
165 170 175

Gln Phe Glu Leu Thr His Asn Ala Ile His Ser Trp Thr Gly Gly Arg
180 185 190

Ser Pro Tyr Gly Met Ser Thr Leu Glu Phe Thr Ala Tyr Asp Pro Leu
195 200 205

Phe Trp Leu His His Ser Asn Thr Asp Arg Ile Trp Ala Val Trp Gln
210 215 220

Ala Leu Gln Lys Tyr Arg Gly Leu Pro Tyr Asn Glu Ala His Cys Glu
225 230 235 240

Ile Gln Val Leu Lys Gln Pro Leu Arg Pro Phe Asn Asp Asp Ile Asn
245 250 255

His Asn Pro Ile Thr Lys Thr Asn Ala Arg Pro Ile Asp Ser Phe Asp
260 265 270

Tyr Glu Arg Phe Asn Tyr Gln Tyr Asp Thr Leu Ser Phe His Gly Lys
275 280 285

Ser Ile Pro Glu Leu Asn Asp Leu Leu Glu Glu Arg Lys Arg Glu Glu
290 295 300

Arg Thr Phe Ala Ala Phe Leu Leu Arg Gly Ile Gly Cys Ser Ala Asp
305 310 315 320

Val Val Phe Asp Ile Cys Arg Pro Asn Gly Asp Cys Val Phe Ala Gly
325 330 335

Thr Phe Ala Val Leu Gly Gly Glu Leu Glu Met Pro Trp Ser Phe Asp
340 345 350

Arg Leu Phe Arg Tyr Asp Ile Thr Arg Val Met Asn Gln Leu His Leu
355 360 365

Gln Tyr Asp Ser Asp Phe Ser Phe Arg Val Lys Leu Val Ala Thr Asn
370 375 380

Gly Thr Glu Leu Ser Ser Asp Leu Leu Lys Ser Pro Thr Ile Glu His
385 390 395 400

Glu Leu

<210> 39
<211> 515
<212> PRT
<213> Haliotis tuberculata

<400> 39
Gly Ala His Arg Gly Pro Val Glu Glu Thr Glu Val Thr Arg Gln His
1 5 10 15

Thr Asp Gly Asn Ala His Phe His Arg Lys Glu Val Asp Ser Leu Ser
20 25 30

Leu Asp Glu Ala Asn Asn Leu Lys Asn Ala Leu Tyr Lys Leu Gln Asn
35 40 45

Asp His Ser Leu Thr Gly Tyr Glu Ala Ile Ser Gly Tyr His Gly Tyr
50 55 60

Pro Asn Leu Cys Pro Glu Glu Gly Asp Asp Lys Ile Pro Leu Leu Arg
65 70 75 80

Pro Arg Met Gly Ile Phe Pro Tyr Trp His Arg Leu Leu Thr Ile Gln
85 90 95

Leu Glu Arg Ala Leu Glu His Asn Gly Ala Leu Leu Gly Val Pro Tyr
100 105 110

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Trp Asp Trp Asn Lys Asp Leu Ser Ser Leu Pro Ala Phe Phe Ser Asp
        115                 120                 125

Ser Ser Asn Asn Asn Pro Tyr Phe Lys Tyr His Ile Ala Gly Val Gly
    130                 135                 140

His Asp Thr Val Arg Glu Pro Thr Ser Leu Ile Tyr Asn Gln Pro Gln
145                 150                 155                 160

Ile His Gly Tyr Asp Tyr Leu Tyr Tyr Leu Ala Leu Thr Thr Leu Glu
                165                 170                 175

Glu Asn Asn Tyr Trp Asp Phe Glu Val Gln Tyr Glu Ile Leu His Asn
            180                 185                 190

Ala Val His Ser Trp Leu Gly Gly Ser Gln Lys Tyr Ser Met Ser Thr
        195                 200                 205

Leu Glu Tyr Ser Ala Phe Asp Pro Val Phe Met Ile Leu His Ser Gly
    210                 215                 220

Leu Asp Arg Leu Trp Ile Ile Trp Gln Glu Leu Gln Lys Ile Arg Arg
225                 230                 235                 240

Lys Pro Tyr Asn Phe Ala Lys Cys Ala Tyr His Met Met Glu Glu Pro
                245                 250                 255

Leu Ala Pro Phe Ser Tyr Pro Ser Ile Asn Gln Asp Glu Phe Thr Arg
            260                 265                 270

Ala Asn Ser Lys Pro Ser Thr Val Phe Asp Ser His Lys Phe Gly Tyr
        275                 280                 285

His Tyr Asp Asn Leu Asn Val Arg Gly His Ser Ile Gln Glu Leu Asn
    290                 295                 300

Thr Ile Ile Asn Asp Leu Arg Asn Thr Asp Arg Ile Tyr Ala Gly Phe
305                 310                 315                 320

Val Leu Ser Gly Ile Gly Thr Ser Ala Ser Val Lys Ile Tyr Leu Arg
                325                 330                 335

Thr Asp Asp Asn Asp Glu Glu Val Gly Thr Phe Thr Val Leu Gly Gly
            340                 345                 350

Glu Arg Glu Met Pro Trp Ala Tyr Glu Arg Val Phe Lys Tyr Asp Ile
        355                 360                 365

Thr Glu Val Ala Asp Arg Leu Lys Ile Lys Leu Trp Gly His Pro Leu
    370                 375                 380

Thr Ser Gly Thr Gly Asp His Ile Leu Thr Asn Gly Ile Gly Gly Lys
385                 390                 395                 400

Gln Glu Pro Thr Gln Ile Leu Ser Ser Ser Thr Asp Leu Pro Ile Met
                405                 410                 415
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Thr Thr Met Phe Leu Leu Ser Gln Xaa Gly Arg Asn Leu His Ile Pro
420 425 430

Pro Lys Val Val Val Lys Lys Gly Thr Arg Ile Glu Phe His Pro Val
435 440 445

Asp Asp Ser Val Thr Arg Pro Val Val Asp Leu Gly Ser Tyr Thr Ala
450 455 460

Leu Phe Asn Cys Val Val Pro Pro Phe Thr Tyr His Gly Phe Glu Leu
465 470 475 480

Asn His Val Tyr Ser Val Lys Pro Gly Asp Tyr Tyr Val Thr Gly Pro
485 490 495

Thr Arg Asp Leu Cys Gln Asn Ala Asp Val Arg Ile His Ile His Val
500 505 510

Glu Asp Glu
515

<210> 40
<211> 322
<212> PRT
<213> Megathura crenulata

<400> 40
Gly Leu Pro Tyr Trp Asp Trp Thr Glu Pro Met Thr His Ile Pro Gly
1 5 10 15

Leu Ala Gly Asn Lys Thr Tyr Val Asp Ser His Gly Ala Ser His Thr
20 25 30

Asn Pro Phe His Ser Ser Val Ile Ala Phe Glu Glu Asn Ala Pro His
35 40 45

Thr Lys Arg Gln Ile Asp Gln Arg Leu Phe Lys Pro Ala Thr Phe Gly
50 55 60

His His Thr Asp Leu Phe Asn Gln Ile Leu Tyr Ala Phe Glu Gln Glu
65 70 75 80

Asp Tyr Cys Asp Phe Glu Val Gln Phe Glu Ile Thr His Asn Thr Ile
85 90 95

His Ala Trp Thr Gly Gly Ser Glu His Phe Ser Met Ser Ser Leu His
100 105 110

Tyr Thr Ala Phe Asp Pro Leu Phe Tyr Phe His His Ser Asn Val Asp
115 120 125

Arg Leu Trp Ala Val Trp Gln Ala Leu Gln Met Arg Arg His Lys Pro
130 135 140

Tyr Arg Ala His Cys Ala Ile Ser Leu Glu His Met His Leu Lys Pro
145 150 155 160

Phe Ala Phe Ser Ser Pro Leu Asn Asn Asn Glu Lys Thr His Ala Asn
165 170 175

Ala Met Pro Asn Lys Ile Tyr Asp Tyr Glu Asn Val Leu His Tyr Thr
180 185 190

Tyr Glu Asp Leu Thr Phe Gly Gly Ile Ser Leu Glu Asn Ile Glu Lys
195 200 205

Met Ile His Glu Asn Gln Gln Glu Asp Arg Ile Tyr Ala Gly Phe Leu
210 215 220

Leu Ala Gly Ile Arg Thr Ser Ala Asn Val Asp Ile Phe Ile Lys Thr
225 230 235 240

Thr Asp Ser Val Gln His Lys Ala Gly Thr Phe Ala Val Leu Gly Gly
245 250 255

Ser Lys Glu Met Lys Trp Gly Phe Asp Arg Val Phe Lys Phe Asp Ile
260 265 270

Thr His Val Leu Lys Asp Leu Asp Leu Thr Ala Asp Gly Asp Phe Glu
275 280 285

Val Thr Val Asp Ile Thr Glu Val Asp Gly Thr Lys Leu Ala Ser Ser
290 295 300

Leu Ile Pro His Ala Ser Val Ile Arg Glu His Ala Arg Gly Lys Leu
305 310 315 320

Asn Arg

<210> 41
<211> 414
<212> PRT
<213> Megathura crenulata

<400> 41
Val Lys Phe Asp Lys Val Pro Arg Ser Arg Leu Ile Arg Lys Asn Val
1 5 10 15

Asp Arg Leu Ser Pro Glu Glu Met Asn Glu Leu Arg Lys Ala Leu Ala
20 25 30

Leu Leu Lys Glu Asp Lys Ser Ala Gly Gly Phe Gln Gln Leu Gly Ala
35 40 45

Phe His Gly Glu Pro Lys Trp Cys Pro Ser Pro Glu Ala Ser Lys Lys
50 55 60

Phe Ala Cys Cys Val His Gly Met Ser Val Phe Pro His Trp His Arg
65 70 75 80

Leu Leu Thr Val Gln Ser Glu Asn Ala Leu Arg Arg His Gly Tyr Asp
85 90 95

Gly Ala Leu Pro Tyr Trp Asp Trp Thr Ser Pro Leu Asn His Leu Pro
100 105 110

Glu Leu Ala Asp His Glu Lys Tyr Val Asp Pro Glu Asp Gly Val Glu
115 120 125

Lys His Asn Pro Trp Phe Asp Gly His Ile Asp Thr Val Asp Lys Thr
130 135 140

Thr Thr Arg Ser Val Gln Asn Lys Leu Phe Glu Gln Pro Glu Phe Gly
145 150 155 160

His Tyr Thr Ser Ile Ala Lys Gln Val Leu Leu Ala Leu Glu Gln Asp
165 170 175

Asn Phe Cys Asp Phe Glu Ile Gln Tyr Glu Ile Ala His Asn Tyr Ile
180 185 190

His Ala Leu Val Gly Gly Ala Gln Pro Tyr Gly Met Ala Ser Leu Arg
195 200 205

Tyr Thr Ala Phe Asp Pro Leu Phe Tyr Leu His His Ser Asn Thr Asp
210 215 220

Arg Ile Trp Ala Ile Trp Gln Ala Leu Gln Lys Tyr Arg Gly Lys Pro
225 230 235 240

Tyr Asn Val Ala Asn Cys Ala Val Thr Ser Met Arg Glu Pro Leu Gln
245 250 255

Pro Phe Gly Leu Ser Ala Asn Ile Asn Thr Asp His Val Thr Lys Glu
260 265 270

His Ser Val Pro Phe Asn Val Phe Asp Tyr Lys Thr Asn Phe Asn Tyr
275 280 285

Glu Tyr Asp Thr Leu Glu Phe Asn Gly Leu Ser Ile Ser Gln Leu Asn
290 295 300

Lys Lys Leu Glu Ala Ile Lys Ser Gln Asp Arg Phe Phe Ala Gly Phe
305 310 315 320

Leu Leu Ser Gly Phe Lys Lys Ser Ser Leu Val Lys Phe Asn Ile Cys
325 330 335

Thr Asp Ser Ser Asn Cys His Pro Ala Gly Glu Phe Tyr Leu Leu Gly
340 345 350

Asp Glu Asn Glu Met Pro Trp Ala Tyr Asp Arg Val Phe Lys Tyr Asp
355 360 365

Ile Thr Glu Lys Leu His Asp Leu Lys Leu His Ala Glu Asp His Phe
370 375 380

Tyr Ile Asp Tyr Glu Val Phe Asp Leu Lys Pro Ala Ser Leu Gly Lys
385 390 395 400

Asp Leu Phe Lys Gln Pro Ser Val Ile His Glu Pro Arg Ile
405 410

<210> 42
<211> 411
<212> PRT
<213> Megathura crenulata

<400> 42
Gly His His Glu Gly Glu Val Tyr Gln Ala Glu Val Thr Ser Ala Asn
1 5 10 15

Arg Ile Arg Lys Asn Ile Glu Asn Leu Ser Leu Gly Glu Leu Glu Ser
20 25 30

Leu Arg Ala Ala Phe Leu Glu Ile Glu Asn Asp Gly Thr Tyr Glu Ser
35 40 45

Ile Ala Lys Phe His Gly Ser Pro Gly Leu Cys Gln Leu Asn Gly Asn
50 55 60

Pro Ile Ser Cys Cys Val His Gly Met Pro Thr Phe Pro His Trp His
65 70 75 80

Arg Leu Tyr Val Val Val Val Glu Asn Ala Leu Leu Lys Lys Gly Ser
85 90 95

Ser Val Ala Val Pro Tyr Trp Asp Trp Thr Lys Arg Ile Glu His Leu
100 105 110

Pro His Leu Ile Ser Asp Ala Thr Tyr Tyr Asn Ser Arg Gln His His
115 120 125

Tyr Glu Thr Asn Pro Phe His His Gly Lys Ile Thr His Glu Asn Glu
130 135 140

Ile Thr Thr Arg Asp Pro Lys Asp Ser Leu Phe His Ser Asp Tyr Phe
145 150 155 160

Tyr Glu Gln Val Leu Tyr Ala Leu Glu Gln Asp Asn Phe Cys Asp Phe
165 170 175

Glu Ile Gln Leu Glu Ile Leu His Asn Ala Leu His Ser Leu Leu Gly
180 185 190

Gly Lys Gly Lys Tyr Ser Met Ser Asn Leu Asp Tyr Ala Ala Phe Asp
195 200 205

Pro Val Phe Phe Leu His His Ala Thr Thr Asp Arg Ile Trp Ala Ile
210 215 220

Trp Gln Asp Leu Gln Arg Phe Arg Lys Arg Pro Tyr Arg Glu Ala Asn
225 230 235 240

```
Cys Ala Ile Gln Leu Met His Thr Pro Leu Gln Pro Phe Asp Lys Ser
                245                 250                 255

Asp Asn Asn Asp Glu Ala Thr Lys Thr His Ala Thr Pro His Asp Gly
            260                 265                 270

Phe Glu Tyr Gln Asn Ser Phe Gly Tyr Ala Tyr Asp Asn Leu Glu Leu
        275                 280                 285

Asn His Tyr Ser Ile Pro Gln Leu Asp His Met Leu Gln Glu Arg Lys
    290                 295                 300

Arg His Asp Arg Val Phe Ala Gly Phe Leu Leu His Asn Ile Gly Thr
305                 310                 315                 320

Ser Ala Asp Gly His Val Phe Val Cys Leu Pro Thr Gly Glu His Thr
                325                 330                 335

Lys Asp Cys Ser His Glu Ala Gly Met Phe Ser Ile Leu Gly Gly Gln
            340                 345                 350

Thr Glu Met Ser Phe Val Phe Asp Arg Leu Tyr Lys Leu Asp Ile Thr
        355                 360                 365

Lys Ala Leu Lys Lys Asn Gly Val His Leu Gln Gly Asp Phe Asp Leu
    370                 375                 380

Glu Ile Glu Ile Thr Ala Val Asn Gly Ser His Leu Asp Ser His Val
385                 390                 395                 400

Ile His Ser Pro Thr Ile Leu Phe Glu Ala Gly
                405                 410


<210> 43
<211> 111
<212> PRT
<213> Megathura crenulata

<400> 43
Asp Ser Ala His Thr Asp Asp Gly His Thr Glu Pro Val Met Ile Arg
  1               5                  10                  15

Lys Asp Ile Thr Gln Leu Asp Lys Arg Gln Gln Leu Ser Leu Val Lys
            20                  25                  30

Ala Leu Glu Ser Met Lys Ala Asp His Ser Ser Asp Gly Phe Gln Ala
        35                  40                  45

Ile Ala Ser Phe His Ala Leu Pro Pro Leu Cys Pro Ser Pro Ala Ala
    50                  55                  60

Ser Lys Arg Phe Ala Cys Cys Val His Gly Met Pro Thr Phe Pro Gln
65                  70                  75                  80
```

Trp His Arg Leu Tyr Thr Val Gln Phe Gln Asp Ser Leu Arg Lys His
85 90 95

Gly Ala Val Val Gly Leu Pro Tyr Trp Asp Trp Thr Leu Pro Arg
100 105 110

<210> 44
<211> 317
<212> PRT
<213> Megathura crenulata

<400> 44
Gly Leu Pro Tyr Trp Asp Trp Thr Met Pro Met Ser His Leu Pro Glu
1 5 10 15

Leu Ala Thr Ser Glu Thr Tyr Leu Asp Pro Val Thr Gly Glu Thr Lys
20 25 30

Asn Asn Pro Phe His His Ala Gln Val Ala Phe Glu Asn Gly Val Thr
35 40 45

Ser Arg Asn Pro Asp Ala Lys Leu Phe Met Lys Pro Thr Tyr Gly Asp
50 55 60

His Thr Tyr Leu Phe Asp Ser Met Ile Tyr Ala Phe Glu Gln Glu Asp
65 70 75 80

Phe Cys Asp Phe Glu Val Gln Tyr Glu Leu Thr His Asn Ala Ile His
85 90 95

Ala Trp Val Gly Gly Ser Glu Lys Tyr Ser Met Ser Ser Leu His Tyr
100 105 110

Thr Ala Phe Asp Pro Ile Phe Tyr Leu His His Ser Asn Val Asp Arg
115 120 125

Leu Trp Ala Ile Trp Gln Ala Leu Gln Ile Arg Arg Gly Lys Ser Tyr
130 135 140

Lys Ala His Cys Ala Ser Ser Gln Glu Arg Glu Pro Leu Lys Pro Phe
145 150 155 160

Ala Phe Ser Ser Pro Leu Asn Asn Asn Glu Lys Thr Tyr His Asn Ser
165 170 175

Val Pro Thr Asn Val Tyr Asp Tyr Val Gly Val Leu His Tyr Arg Tyr
180 185 190

Asp Asp Leu Gln Phe Gly Gly Met Thr Met Ser Glu Leu Glu Glu Tyr
195 200 205

Ile His Lys Gln Thr Gln His Asp Arg Thr Phe Ala Gly Phe Phe Leu
210 215 220

Ser Tyr Ile Gly Thr Ser Ala Ser Val Asp Ile Phe Ile Asn Arg Glu
225 230 235 240

Gly His Asp Lys Tyr Lys Val Gly Ser Phe Val Val Leu Gly Gly Ser
245 250 255

Lys Glu Met Lys Trp Gly Phe Asp Arg Met Tyr Lys Tyr Glu Ile Thr
260 265 270

Glu Ala Leu Lys Thr Leu Asn Val Ala Val Asp Asp Gly Phe Ser Ile
275 280 285

Thr Val Glu Ile Thr Asp Val Asp Gly Ser Pro Pro Ser Ala Asp Leu
290 295 300

Ile Pro Pro Pro Ala Ile Ile Phe Glu Arg Gly His Ala
305 310 315

<210> 45
<211> 411
<212> PRT
<213> Megathura crenulata

<400> 45
Asp Ala Lys Asp Phe Gly His Ser Arg Lys Ile Arg Lys Ala Val Asp
1 5 10 15

Ser Leu Thr Val Glu Glu Gln Thr Ser Leu Arg Arg Ala Met Ala Asp
20 25 30

Leu Gln Asp Asp Lys Thr Ser Gly Gly Phe Gln Gln Ile Ala Ala Phe
35 40 45

His Gly Glu Pro Lys Trp Cys Pro Ser Pro Glu Ala Glu Lys Lys Phe
50 55 60

Ala Cys Cys Val His Gly Met Ala Val Phe Pro His Trp His Arg Leu
65 70 75 80

Leu Thr Val Gln Gly Glu Asn Ala Leu Arg Lys His Gly Phe Thr Gly
85 90 95

Gly Leu Pro Tyr Trp Asp Trp Thr Arg Ser Met Ser Ala Leu Pro His
100 105 110

Phe Val Ala Asp Pro Thr Tyr Asn Asp Ala Ile Ser Ser Gln Glu Glu
115 120 125

Asp Asn Pro Trp His His Gly His Ile Asp Ser Val Gly His Asp Thr
130 135 140

Thr Arg Asp Val Arg Asp Asp Leu Tyr Gln Ser Pro Gly Phe Gly His
145 150 155 160

Tyr Thr Asp Ile Ala Gln Gln Val Leu Leu Ala Phe Glu Gln Asp Ser
165 170 175

```
Phe Cys Asp Phe Glu Val Gln Phe Glu Ile Ala His Asn Phe Ile His
            180                 185                 190

Ala Leu Ile Gly Gly Asn Glu Pro Tyr Ser Met Ser Ser Leu Arg Tyr
        195                 200                 205

Thr Thr Tyr Asp Pro Ile Phe Phe Leu His His Ser Ser Thr Asp Arg
    210                 215                 220

Leu Trp Ala Ile Trp Gln Ala Leu Gln Lys Tyr Arg Gly Lys Pro Tyr
225                 230                 235                 240

Asn Thr Ala Asn Cys Ala Ile Ala Ser Met Arg Lys Pro Leu Gln Pro
                245                 250                 255

Phe Gly Leu Asp Ser Val Ile Asn Pro Asp Asp Glu Thr Arg Glu His
            260                 265                 270

Ser Val Pro Phe Arg Val Phe Asp Tyr Lys Asn Asn Phe Asp Tyr Glu
        275                 280                 285

Tyr Glu Ser Leu Ala Phe Asn Gly Leu Ser Ile Ala Gln Leu Asp Arg
    290                 295                 300

Glu Leu Gln Arg Arg Lys Ser His Asp Arg Val Phe Ala Gly Phe Leu
305                 310                 315                 320

Leu His Glu Ile Gly Gln Ser Ala Lys His Asn Val Ser Asp Cys Asp
                325                 330                 335

His Tyr Ala Gly Glu Phe Tyr Ile Leu Gly Asp Glu Ala Glu Met Pro
            340                 345                 350

Trp Arg Tyr Asp Arg Val Tyr Lys Tyr Glu Ile Thr Gln Gln Leu His
        355                 360                 365

Asp Leu Asp Leu His Val Gly Asp Asn Phe Phe Leu Lys Tyr Glu Ala
    370                 375                 380

Phe Asp Leu Asn Gly Gly Ser Leu Gly Gly Ser Ile Phe Ser Gln Pro
385                 390                 395                 400

Ser Val Ile Phe Glu Pro Ala Ala Gly Met Phe
                405                 410
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<210> 46
<211> 109
<212> PRT
<213> Megathura crenulata

<400> 46

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Gly Ser His Gln Ala Asp Glu Tyr Arg Glu Ala Val Thr Ser Ala Ser
  1               5                  10                  15

His Ile Arg Lys Asn Ile Arg Asp Leu Ser Glu Gly Glu Ile Glu Ser
             20                  25                  30
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Ile Arg Ser Ala Phe Leu Gln Ile Gln Lys Glu Gly Ile Tyr Glu Asn
35 40 45

Ile Ala Lys Phe His Gly Lys Pro Gly Leu Cys Glu His Asp Gly His
50 55 60

Pro Val Ala Cys Cys Val His Gly Met Pro Thr Phe Pro His Trp His
65 70 75 80

Arg Leu Tyr Val Leu Gln Val Glu Asn Ala Leu Leu Glu Arg Gly Ser
85 90 95

Ala Val Ala Val Pro Tyr Trp Asp Trp Thr Leu Pro Arg
100 105

<210> 47
<211> 329
<212> PRT
<213> Megathura crenulata

<400> 47
Met Ala Val Phe Pro His Trp His Arg Leu Phe Val Lys Gln Met Glu
1 5 10 15

Asp Ala Leu Ala Ala His Gly Ala His Ile Gly Ile Pro Tyr Trp Asp
20 25 30

Trp Thr Ser Ala Phe Ser His Leu Pro Ala Leu Val Thr Asp His Glu
35 40 45

Asn Asn Pro Phe His His Gly His Ile Gly His Leu Asn Val Asp Thr
50 55 60

Ser Arg Ser Pro Arg Asp Met Leu Phe Asn Asp Pro Glu Gln Gly Ser
65 70 75 80

Glu Ser Phe Phe Tyr Arg Gln Val Leu Leu Thr Leu Glu Gln Thr Asp
85 90 95

Phe Cys Gln Phe Glu Val Gln Phe Glu Leu Thr His Asn Ala Ile His
100 105 110

Ser Trp Thr Gly Gly His Thr Pro Tyr Gly Met Ser Ser Leu Glu Tyr
115 120 125

Thr Ala Tyr Asp Pro Leu Phe Tyr Leu His His Ser Asn Thr Asp Arg
130 135 140

Ile Trp Ala Ile Trp Gln Ala Leu Gln Lys Tyr Arg Gly Leu Pro Tyr
145 150 155 160

Asn Ala Ala His Cys Asp Ile Gln Val Leu Lys Gln Pro Leu Lys Pro
165 170 175

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Phe Ser Glu Ser Arg Asn Pro Asn Pro Val Thr Arg Ala Asn Ser Arg
            180                 185                 190

Ala Val Asp Ser Phe Asp Tyr Glu Lys Phe Asn Tyr Gln Tyr Asp Thr
        195                 200                 205

Leu Thr Phe His Gly Leu Ser Ile Pro Glu Leu Asp Ala Met Leu Gln
    210                 215                 220

Glu Arg Lys Lys Glu Glu Arg Thr Phe Ala Ala Phe Leu Leu His Gly
225                 230                 235                 240

Phe Gly Ala Ser Ala Asp Val Ser Phe Asp Val Cys Thr Pro Asp Gly
                245                 250                 255

His Cys Ala Phe Ala Gly Thr Phe Ala Val Leu Gly Gly Glu Leu Glu
            260                 265                 270

Met Pro Trp Ser Phe Glu Arg Leu Phe Arg Tyr Asp Ile Thr Lys Val
        275                 280                 285

Leu Lys Gln Met Asn Leu His Tyr Asp Ser Glu Phe His Phe Glu Leu
    290                 295                 300

Lys Ile Val Gly Thr Asp Gly Thr Glu Leu Pro Ser Asp Arg Ile Lys
305                 310                 315                 320

Ser Pro Thr Ile Glu His His Gly Gly
                325
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<210> 48
<211> 103
<212> PRT
<213> Megathura crenulata

<400> 48

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Gly His Asp His Ser Glu Arg His Asp Gly Phe Phe Arg Lys Glu Val
  1               5                  10                  15

Gly Ser Leu Ser Leu Asp Glu Ala Asn Asp Leu Lys Asn Ala Leu Tyr
            20                  25                  30

Lys Leu Gln Asn Asp Gln Gly Pro Asn Gly Tyr Glu Ser Ile Ala Gly
        35                  40                  45

Tyr His Gly Tyr Pro Phe Leu Cys Pro Glu His Gly Glu Asp Gln Tyr
    50                  55                  60

Ala Cys Cys Val His Gly Met Pro Val Phe Pro His Trp His Arg Leu
65                  70                  75                  80

His Thr Ile Gln Phe Glu Arg Ala Leu Lys Glu His Gly Ser His Leu
                85                  90                  95

Gly Leu Pro Tyr Trp Asp Trp
            100
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<210> 49
<211> 1269
<212> DNA
<213> Haliotis tuberculata

<400> 49
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acgtcactgc atctacaggg cctctgagtt tcgaagacat aacatcttac catgccgcac 180
cagcgtcgtg tgactacaag ggacggaaga tcgcctgctg tgtccacggt atgcccagtt 240
tcccccttctg gcacagggca tatgtcgtcc aagccgagcg ggcactgttg tccaaacgga 300
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tgactgaacc catctacatt gacagtaaag gtggaaaggc tcaaaccaac tactggtacc 420
gcggcgagat agcgttcatc aataagaaga ctgcgcgagc tgtagatgat cgcctattcg 480
agaaggtgga gcctggtcac tacacacatc ttatggagac tgtcctcgac gctctcgaac 540
aggacgaatt ctgtaaattt gaaatccagt tcgagttggc tcataatgct atccattact 600
tggttggcgg taaatttgaa tattcaatgt caaacttgga atacacctcc tacgacccca 660
tcttcttcct ccaccactcc aacgttgacc gcctcttcgc catctggcag cgtcttcagg 720
aactgcgagg aaagaatccc aatgcaatgg actgtgcaca tgaactcgct caccagcaac 780
tccaaccctt caacagggac agcaatccag tccagctcac aaaggaccac tcgacacctg 840
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tgacgccaga acagctgaaa acagaactag acgaacgcca ctccaaagaa cgtgcgtttg 960
caagcttccg actcagtggc tttgggggtt ctgccaacgt tgttgtctat gcatgtgtcc 1020
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gcgtgaatgg cacagcactt tcacctgatc ttcttcctca accaactgtt gcctaccgac 1260
ctgggaaag 1269

<210> 50
<211> 569
<212> DNA
<213> Haliotis tuberculata

<400> 50
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cccttgtttg tcgacccgga aggaggaaag gcccatgaca acgcatggta tcgtggaaac 120
atcaagtttg agaataagaa gactgcaaga gctgttgacg atcgcctttt cgagaaggtt 180
ggaccaggag agaatacccg actctttgaa ggaattctcg atgctcttga acaggatgaa 240
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tcctccatca ctccaacacc ggaccgcatc ttcgccatct gggaacgtct tcaggtactc 420
agaggaaagg accccaacac cgccgactgc gcacacaacc tcatccatga gcccatggaa 480
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agctttgatt atgcccacct tggctacca 569

<210> 51
<211> 1246
<212> DNA
<213> Haliotis tuberculata

<400> 51
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catctgacac gcgaggaggt gtacgagctg cgcagagcta tggagagatt ccaggccgac 120
acatccgttg atgggtacca ggctacggtt gagtatcacg gcttacctgc tcgatgtcca 180

ttccccgagg ccacaaatag gttcgcctgt tgcatccacg gcatggcgac attccctcat 240
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gccacctata gagatcccat cagcggggac agcagacaca acccccttcca cgatgttgaa 420
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<210> 52
<211> 1242
<212> DNA
<213> Haliotis tuberculata

<400> 52
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agaacgacgg agtctatgag aatattgcca agttccacgg caagcctggg ttgtgtgatg 180
ataacggtcg caaggttgcc tgttgtgtcc atggaatgcc caccttcccc cagtggcaca 240
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catactggga ctggactgaa acatttacag agctgccatc tttgattgct gaggctacct 360
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accaaaacgt catgttggtt tttgaacagg acaactactg cgacttcgag atacagtttg 540
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tgtgggccat ctggcaggag ctgcagaggt acaggaagaa gccatacaat gaagcggatt 720
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acatcctgcc agagccatcc ttgatttttg tgcctggttc aa 1242

<210> 53
<211> 1257
<212> DNA
<213> Haliotis tuberculata

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caccatctgc agctcaccgt tatgcttgct gtgtccacgg catggctaca tttccccagt 240

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aggaaaacta ctgtgacttt gagattcagt ttgaaattct tcacaacggc gttcacacgt 600
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aacagagagg gctctcgggt gatgaggctc actgtgctct cgagcaaatg agagaaccat 780
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<210> 54
<211> 1257
<212> DNA
<213> Megathura crenulata

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attcatctga tgggttccag gcaatcgctt ccttccatgc tcttcctcct ctttgtccat 180
caccagctgc ttcaaagagg tttgcgtgct gcgtccatgg catggcaacg ttcccacaat 240
ggcaccgtct gtacacagtc caattccaag attctctcag aaaacatggt gcagtcgttg 300
gacttccgta ctgggactgg accctacctc gttctgaatt accagagctc ctgaccgtct 360
caactattca tgacccggag acaggcagag atataccaaa tccatttatt ggttctaaaa 420
tagagtttga aggagaaaac gtacatacta aaagagatat caatagggat cgtctcttcc 480
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<210> 55
<211> 1254
<212> DNA
<213> Megathura crenulata

<400> 55
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gtgagcgaga tattggaagc cttaaatatg ctttgagcag cttgcaggca gatacctcag 120
cagatggttt tgctgccatt gcatccttcc atggtctgcc tgccaaatgt aatgacagcc 180
acaataacga ggtggcatgc tgtatccatg gaatgcctac attcccccac tggcacagac 240
tctacaccct ccaatttgag caagctctaa gaagacatgg ctctagtgta gcagtaccct 300

actgggactg gacaaagcca atacataata ttccacatct gttcacagac aaagaatact 360
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acgatacata cacggtaaga gacgtccaag aaggcctgtt ccacctgaca tcaacgggtg 480
aacactcagc gcttctgaat caagctcttt tggcgctgga acagcacgac tactgcgatt 540
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<210> 56
<211> 509
<212> DNA
<213> Megathura crenulata

<400> 56
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accacggtcc aaatggatac caggctatag cagcgttcca tggaaaccca ccaatgtgcc 180
ctatgccaga tggaaagaat tactcgtgtt gtacacatgg catggctact ttcccccact 240
ggcacagact gtacacaaaa cagatggaag atgccttgac cgcccatggt gccagagtcg 300
gccttcctta ctgggacggg acaactgcct ttacagcttt gccaactttt gtcacagatg 360
aagaggacaa tcctttccat catggtcaca tagactattt gggagtggat acaactcggt 420
cgccccgaga caagttgttc aatgatccag agcgaggatc agaatcgttc ttctacaggc 480
aggttctctt ggctttggag cagacagat 509

<210> 57
<211> 943
<212> DNA
<213> Megathura crenulata

<400> 57
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gtggcgtttg aaaatggtgt aacaagcagg aatcctgatg ccaaactttt tatgaaacca 180
acttacggag accacactta cctcttcgac agcatgatct acgcatttga gcaggaagac 240
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<210> 58
<211> 1248
<212> DNA
<213> Megathura crenulata

<400> 58
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ggggtttcca gcagattgca gcattccacg gagaaccaaa atggtgtcca agccccgaag 180
cggagaaaaa atttgcatgc tgtgttcatg gaatggctgt tttccctcac tggcacagat 240
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catacagtat gtcatctttg aggtatacta catacgatcc aatcttcttc ttgcaccgct 660
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acaacactgc aaactgtgcc attgcatcca tgagaaaacc acttcagcca tttggtcttg 780
atagtgtcat aaatccagat gacgaaactc gtgaacattc ggttcctttc cgagtcttcg 840
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ggaggtatga ccgtgtgtac aagtacgaga taacacagca gctgcacgat ttagatctac 1140
atgttggaga taatttcttc cttaaatatg aagcctttga tctgaatggc ggaagtcttg 1200
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<210> 59
<211> 1257
<212> DNA
<213> Megathura crenulata

<400> 59
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aaaaagaggg tatatatgaa aacattgcaa agttccatgg aaaaccagga ctttgtgaac 180
atgatggaca tcctgttgct tgttgtgtcc atggcatgcc cacctttccc cactggcaca 240
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atttcaattc acgatcccag acctttgatc ctaatccttt cttcagggga catattgcct 420
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tctgggccat ctggcaggac ttgcagagat atagaaagaa accatacaat gaggctgact 720
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ggtaccaata tgataacctt caatttaacc acttcagcat acaaaagcta gaccaaacta 900
ttcaggctag aaaacaacac gacagagttt ttgctggctt tattcttcac aacattggga 960
catctgctgt tgtagatatt tatatttgcg ttgaacaagg aggagaacaa aactgcaaga 1020
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gcttgtacaa atttgacata acgtctgctc tgcataaact tggtgttccc ttggacggac 1140
atggattcga catcaaagtt gacgtcagag ctgtcaatgg atcgcatctt gatcaacaca 1200
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<212> DNA
<213> Megathura crenulata

<400> 60
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aagctattgc ttctttccac gctttgcctc ctctttgtcc aagtccatct gctgcacata 180
gacacgcttg ttgcctccat ggtatggcta ccttccctca gtggcacaga ctctacacag 240
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gagtaacaac agagagggat gttgatgctg aacacctctt tgcaaaagga aatctggttt 480
acaacaactg gttttgcaat caggcactat atgcactaga acaagaaaat tactgtgact 540
ttgaaataca gttcgaaatt ttgcataatg gaattcattc atgggttgga ggatcaaaga 600
cccattcaat aggtcatctt cattacgcat catacgatcc actgttctat atccaccatt 660
cgcagacaga tcgcatttgg gctatctggc aagctctcca ggagcacaga ggtctttcag 720
ggaaggaagc acactgcgcc ctggagcaaa tgaaagaccc tctcaaacct ttcagctttg 780
gaagtcccta taatttgaac aaacgcactc aagagttctc caagcctgaa gacacatttg 840
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gtttacataa ctatataaaa caacaacagg aagctgatag agtcttcgca ggattccttc 960
ttaaaggatt tggacaatca gcatccgtat cgtttgatat ctgcagacca gaccagagtt 1020
gccaagaagc tggatacttc tcagttctcg gtggaagttc agaaatgccg tggcagtttg 1080
acaggcttta caagtacgac attacaaaaa cgttgaaaga catgaaactg cgatacgatg 1140
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tgattccaac tccttctgtt ctccttgaag aaggaaagc 1239

<210> 61
<211> 1251
<212> DNA
<213> Haliotis tuberculata

<400> 61
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ccgagagaga tctcgccagc ctgaaatctg caatgaggtc tctacaagct gacgatgggg 120
tgaacggtta tcaagccatt gcatcattcc acggtctccc ggcttcttgt catgatgatg 180
agggacatga gattgcctgt tgtatccacg gaatgccagt attcccacac tggcacaggc 240
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actgggactg gaccaaacct atcagcaaac tgcctgatct cttcaccagc cctgaatatt 360
acgatccttg gagggatgca gttgtcaata atccatttgc taaaggctac attaaatccg 420
aggacgctta cacggttagg gatcctcagg acattttgta ccacttgcag gacgaaacgg 480
gaacatctgt tttgttagat caaactcttt tagccttaga gcagacagat ttctgtgatt 540
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cctttgttga caaaatatgg gcagtctggc aagctctgca aaagaagaga aagcgtccct 720
atcataaagc ggattgtgct cttaacatga tgaccaaacc aatgcgacca tttgcacacg 780
atttcaatca caatggattc acaaaaatgc acgcagtccc caacactcta tttgactttc 840
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aagcggaaat caaccggcga aaaagccaaa caagagtctt tgccgggttc cttctacatg 960
gcattggaag atcagctgat gtacgatttt ggatttgcaa gacagctgac gactgccacg 1020
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actttaaata cgacatcacc caagctttga aggctcagtc catacaccct gaagatgtgt 1140
ttgacactga tgctcctttc ttcattaaag tggaggtcca tggtgtaaac aagactgctc 1200
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<210> 62
<211> 1185
<212> DNA
<213> Haliotis tuberculata

<400> 62
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caattgctgc ttatcacgga agtcctccca tgtgtcacat gcntgatggt agagacgttg 180
catgttgtac tcatggaatg gcatctttcc ctcactggca cagactgttt gtgaaacaga 240
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gtgcgtttag tcatctgcct gccctagtga ctgaccacga gcacaatccc ttccaccacg 360
gacatattgc tcatcggaat gtggatacat ctcgatctcc gagagacatg ctgttcaatg 420
accccgaaca cgggtcagaa tcattcttct atagacaggt tctcttggct ctagaacaga 480
cagacttctg ccaatttgaa gttcagtttg aaataacaca caatgcaatc cactcttgga 540
ctggaggaca tactccatat ggaatgtcat cactggaata tacagcatat gatccactct 600
tttatctcca ccattccaac actgatcgta tctgggccat ctggcaggca ctccagaaat 660
acagaggttt tcaatacaac gcagctcatt gcgatatcca ggttctgaaa caacctctta 720
aaccattcag cgagtccagg aatccaaacc cagtcaccag agccaattct agggcagtcg 780
attcatttga ttatgagaga ctcaattatc aatatgacac acttaccttc cacggacatt 840
ctatctcaga acttgatgcc atgcttcaag agagaaagaa ggaagagaga acatttgcag 900
ccttcctgtt gcacggattt ggcgccagtg ctgatgtttc gtttgatgtc tgcacacctg 960
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<210> 63
<211> 422
<212> PRT
<213> Haliotis tuberculata

<220>
<221> SIGNAL
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<400> 63
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Asn Val Val Arg Lys Asp Val Ser His Leu Thr Asp Asp Glu Val Gln
20 25 30

Ala Leu His Gly Ala Leu His Asp Val Thr Ala Ser Thr Gly Pro Leu
35 40 45

Ser Phe Glu Asp Ile Thr Ser Tyr His Ala Ala Pro Ala Ser Cys Asp
50 55 60

Tyr Lys Gly Arg Lys Ile Ala Cys Cys Val His Gly Met Pro Ser Phe
65 70 75 80

Pro Phe Trp His Arg Ala Tyr Val Val Gln Ala Glu Arg Ala Leu Leu
85 90 95

Ser Lys Arg Lys Thr Val Gly Met Pro Tyr Trp Asp Trp Thr Gln Thr
100 105 110

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Leu Thr His Leu Pro Ser Leu Val Thr Glu Pro Ile Tyr Ile Asp Ser
        115                 120                 125

Lys Gly Gly Lys Ala Gln Thr Asn Tyr Trp Tyr Arg Gly Glu Ile Ala
    130                 135                 140

Phe Ile Asn Lys Lys Thr Ala Arg Ala Val Asp Asp Arg Leu Phe Glu
145                 150                 155                 160

Lys Val Glu Pro Gly His Tyr Thr His Leu Met Glu Thr Val Leu Asp
                165                 170                 175

Ala Leu Glu Gln Asp Glu Phe Cys Lys Phe Glu Ile Gln Phe Glu Leu
            180                 185                 190

Ala His Asn Ala Ile His Tyr Leu Val Gly Gly Lys Phe Glu Tyr Ser
        195                 200                 205

Met Ser Asn Leu Glu Tyr Thr Ser Tyr Asp Pro Ile Phe Phe Leu His
    210                 215                 220

His Ser Asn Val Asp Arg Leu Phe Ala Ile Trp Gln Arg Leu Gln Glu
225                 230                 235                 240

Leu Arg Gly Lys Asn Pro Asn Ala Met Asp Cys Ala His Glu Leu Ala
                245                 250                 255

His Gln Gln Leu Gln Pro Phe Asn Arg Asp Ser Asn Pro Val Gln Leu
            260                 265                 270

Thr Lys Asp His Ser Thr Pro Ala Asp Leu Phe Asp Tyr Lys Gln Leu
        275                 280                 285

Gly Tyr Ser Tyr Asp Ser Leu Asn Leu Asn Gly Met Thr Pro Glu Gln
    290                 295                 300

Leu Lys Thr Glu Leu Asp Glu Arg His Ser Lys Glu Arg Ala Phe Ala
305                 310                 315                 320

Ser Phe Arg Leu Ser Gly Phe Gly Gly Ser Ala Asn Val Val Val Tyr
                325                 330                 335

Ala Cys Val Pro Asp Asp Asp Pro Arg Ser Asp Asp Tyr Cys Glu Lys
            340                 345                 350

Ala Gly Asp Phe Phe Ile Leu Gly Gly Gln Ser Glu Met Pro Trp Arg
        355                 360                 365

Phe Tyr Arg Pro Phe Phe Tyr Asp Val Thr Glu Ala Val His His Leu
    370                 375                 380

Gly Val Pro Leu Ser Gly His Tyr Tyr Val Lys Thr Glu Leu Phe Ser
385                 390                 395                 400

Val Asn Gly Thr Ala Leu Ser Pro Asp Leu Leu Pro Gln Pro Thr Val
                405                 410                 415
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Ala Tyr Arg Pro Gly Lys
420

<210> 64
<211> 511
<212> PRT
<213> Haliotis tuberculata

<400> 64
Val His Arg Gly Gly Asn His Glu Asp Glu His His Asp Asp Arg Leu
1 5 10 15

Ala Asp Val Leu Ile Arg Lys Glu Val Asp Phe Leu Ser Leu Gln Glu
20 25 30

Ala Asn Ala Ile Lys Asp Ala Leu Tyr Lys Leu Gln Asn Asp Asp Ser
35 40 45

Lys Gly Gly Phe Glu Ala Ile Ala Gly Tyr His Gly Tyr Pro Asn Met
50 55 60

Cys Pro Glu Arg Gly Thr Asp Lys Tyr Pro Cys Cys Val His Gly Met
65 70 75 80

Pro Val Phe Pro His Trp His Arg Leu His Thr Ile Gln Met Glu Arg
85 90 95

Ala Leu Lys Asn His Gly Ser Pro Met Gly Ile Pro Tyr Trp Asp Trp
100 105 110

Thr Lys Lys Met Ser Ser Leu Pro Ser Phe Phe Gly Asp Ser Ser Asn
115 120 125

Asn Asn Pro Phe Tyr Lys Tyr Tyr Ile Arg Gly Val Gln His Glu Thr
130 135 140

Thr Arg Asp Val Asn Gln Arg Leu Phe Asn Gln Thr Lys Phe Gly Glu
145 150 155 160

Phe Asp Tyr Leu Tyr Tyr Leu Thr Leu Gln Val Leu Glu Glu Asn Ser
165 170 175

Tyr Cys Asp Phe Glu Val Gln Tyr Glu Ile Leu His Asn Ala Val His
180 185 190

Ser Trp Leu Gly Gly Thr Gly Gln Tyr Ser Met Ser Thr Leu Glu His
195 200 205

Ser Ala Phe Asp Pro Val Phe Met Ile His His Ser Ser Leu Asp Arg
210 215 220

Ile Trp Ile Leu Trp Gln Lys Leu Gln Lys Ile Arg Met Lys Pro Tyr
225 230 235 240

Tyr Ala Leu Asp Cys Ala Gly Asp Arg Leu Met Lys Asp Pro Leu His
245 250 255

Pro Phe Asn Tyr Glu Thr Val Asn Glu Asp Glu Phe Thr Arg Ile Asn
260 265 270

Ser Phe Pro Ser Ile Leu Phe Asp His Tyr Arg Phe Asn Tyr Glu Tyr
275 280 285

Asp Asn Met Arg Ile Arg Gly Gln Asp Ile His Glu Leu Glu Glu Val
290 295 300

Ile Gln Glu Leu Arg Asn Lys Asp Arg Ile Phe Ala Gly Phe Val Leu
305 310 315 320

Ser Gly Leu Arg Ile Ser Ala Thr Val Lys Val Phe Ile His Ser Lys
325 330 335

Asn Asp Thr Ser His Glu Glu Tyr Ala Gly Glu Phe Ala Val Leu Gly
340 345 350

Gly Glu Lys Glu Met Pro Trp Ala Tyr Glu Arg Met Leu Lys Leu Asp
355 360 365

Ile Ser Asp Ala Val His Lys Leu His Val Lys Asp Glu Asp Ile Arg
370 375 380

Phe Arg Val Val Val Thr Ala Tyr Asn Gly Asp Val Val Thr Thr Arg
385 390 395 400

Leu Ser Gln Pro Phe Ile Val His Arg Pro Ala His Val Ala His Asp
405 410 415

Ile Leu Val Ile Pro Val Gly Ala Gly His Asp Leu Pro Pro Lys Val
420 425 430

Val Val Lys Ser Gly Thr Lys Val Glu Phe Thr Pro Ile Asp Ser Ser
435 440 445

Val Asn Lys Ala Met Val Glu Leu Gly Ser Tyr Thr Ala Met Ala Lys
450 455 460

Cys Ile Val Pro Pro Phe Ser Tyr His Gly Phe Glu Leu Asp Lys Val
465 470 475 480

Tyr Ser Val Asp His Gly Asp Tyr Tyr Ile Ala Ala Gly Thr His Ala
485 490 495

Leu Cys Glu Gln Asn Leu Arg Leu His Ile His Val Glu His Glu
500 505 510

<210> 65
<211> 197
<212> PRT
<213> Haliotis tuberculata

<400> 65
Gly Leu Pro Tyr Trp Asp Trp Thr Gln His Leu Thr Gln Leu Pro Asp
1 5 10 15

Leu Val Ser Asp Pro Leu Phe Val Asp Pro Glu Gly Gly Lys Ala His
20 25 30

Asp Asn Ala Trp Tyr Arg Gly Asn Ile Lys Phe Glu Asn Lys Lys Thr
35 40 45

Ala Arg Ala Val Asp Asp Arg Leu Phe Glu Lys Val Gly Pro Gly Glu
50 55 60

Asn Thr Arg Leu Phe Glu Gly Ile Leu Asp Ala Leu Glu Gln Asp Glu
65 70 75 80

Phe Cys Asn Phe Glu Ile Gln Phe Glu Leu Ala His Asn Ala Ile His
85 90 95

Tyr Leu Val Gly Gly Arg His Thr Tyr Ser Met Ser His Leu Glu Tyr
100 105 110

Thr Ser Tyr Asp Pro Leu Phe Phe Leu His His Ser Asn Pro Asp Arg
115 120 125

Ile Phe Ala Ile Trp Glu Arg Leu Gln Val Leu Arg Gly Lys Asp Pro
130 135 140

Asn Thr Ala Asp Cys Ala His Asn Leu Ile His Glu Pro Met Glu Pro
145 150 155 160

Phe Arg Arg His Glu Pro Met Glu Pro Phe Arg Arg Asp Ser Asn Pro
165 170 175

Leu Asp Leu Thr Arg Glu Asn Ser Lys Pro Ile Asp Ser Phe Asp Tyr
180 185 190

Ala His Leu Gly Tyr
195

<210> 66
<211> 415
<212> PRT
<213> Haliotis tuberculata

<400> 66
Val Thr Glu Ala Pro Ala Pro Ser Ser Asp Ala His Leu Ala Val Arg
1 5 10 15

Lys Asp Ile Asn His Leu Thr Arg Glu Glu Val Tyr Glu Leu Arg Arg
20 25 30

Ala Met Glu Arg Phe Gln Ala Asp Thr Ser Val Asp Gly Tyr Gln Ala
35 40 45

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Thr Val Glu Tyr His Gly Leu Pro Ala Arg Cys Pro Phe Pro Glu Ala
 50                  55                  60

Thr Asn Arg Phe Ala Cys Cys Ile His Gly Met Ala Thr Phe Pro His
65                  70                  75                  80

Trp His Arg Leu Phe Val Thr Gln Val Glu Asp Ala Leu Ile Arg Arg
                85                  90                  95

Gly Ser Pro Ile Gly Val Pro Tyr Trp Asp Trp Thr Gln Pro Met Ala
            100                 105                 110

His Leu Pro Gly Leu Ala Asp Asn Ala Thr Tyr Arg Asp Pro Ile Ser
        115                 120                 125

Gly Asp Ser Arg His Asn Pro Phe His Asp Val Glu Val Ala Phe Glu
    130                 135                 140

Asn Gly Arg Thr Glu Arg His Pro Asp Ser Arg Leu Phe Glu Gln Pro
145                 150                 155                 160

Leu Phe Gly Lys His Thr Arg Leu Phe Asp Ser Ile Val Tyr Ala Phe
                165                 170                 175

Glu Gln Glu Asp Phe Cys Asp Phe Glu Val Gln Phe Glu Met Thr His
            180                 185                 190

Asn Asn Ile His Ala Trp Ile Gly Gly Gly Glu Lys Tyr Ser Met Ser
        195                 200                 205

Ser Leu His Tyr Thr Ala Phe Asp Pro Ile Phe Tyr Leu Arg His Ser
    210                 215                 220

Asn Thr Asp Arg Leu Trp Ala Ile Trp Gln Ala Leu Gln Ile Arg Arg
225                 230                 235                 240

Asn Arg Pro Tyr Lys Ala His Cys Ala Trp Ser Glu Glu Arg Gln Pro
                245                 250                 255

Leu Lys Pro Phe Ala Phe Ser Ser Pro Leu Asn Asn Asn Glu Lys Thr
            260                 265                 270

Tyr Glu Asn Ser Val Pro Thr Asn Val Tyr Asp Tyr Glu Gly Val Leu
        275                 280                 285

Gly Tyr Thr Tyr Asp Asp Leu Asn Phe Gly Gly Met Asp Leu Gly Gln
    290                 295                 300

Leu Glu Glu Tyr Ile Gln Arg Gln Arg Gln Arg Asp Arg Thr Phe Ala
305                 310                 315                 320

Gly Phe Phe Leu Ser His Ile Gly Thr Ser Ala Asn Val Glu Ile Ile
                325                 330                 335

Ile Asp His Gly Thr Leu His Thr Ser Val Gly Thr Phe Ala Val Leu
            340                 345                 350
```

Gly Gly Glu Lys Glu Met Lys Trp Gly Phe Asp Arg Leu Tyr Lys Tyr
355 360 365

Glu Ile Thr Asp Glu Leu Arg Gln Leu Asn Leu Arg Ala Asp Asp Val
370 375 380

Phe Ser Ile Ser Val Lys Val Thr Asp Val Asp Gly Ser Glu Leu Ser
385 390 395 400

Ser Glu Leu Ile Pro Ser Ala Ala Ile Ile Phe Glu Arg Ser His
405 410 415

<210> 67
<211> 414
<212> PRT
<213> Haliotis tuberculata

<400> 67
Gly His His Gln Ala Asp Glu Tyr Asp Glu Val Val Thr Ala Ala Ser
1 5 10 15

His Ile Arg Lys Asn Leu Lys Asp Leu Ser Lys Gly Glu Val Glu Ser
20 25 30

Leu Arg Ser Ala Phe Leu Gln Leu Gln Asn Asp Gly Val Tyr Glu Asn
35 40 45

Ile Ala Lys Phe His Gly Lys Pro Gly Leu Cys Asp Asp Asn Gly Arg
50 55 60

Lys Val Ala Cys Cys Val His Gly Met Pro Thr Phe Pro Gln Trp His
65 70 75 80

Arg Leu Tyr Val Leu Gln Val Glu Asn Ala Leu Leu Glu Arg Gly Ser
85 90 95

Ala Val Ser Val Pro Tyr Trp Asp Trp Thr Glu Thr Phe Thr Glu Leu
100 105 110

Pro Ser Leu Ile Ala Glu Ala Thr Tyr Phe Asn Ser Arg Gln Gln Thr
115 120 125

Phe Asp Pro Asn Pro Phe Phe Arg Gly Lys Ile Ser Phe Glu Asn Ala
130 135 140

Val Thr Thr Arg Asp Pro Gln Pro Glu Leu Tyr Val Asn Arg Tyr Tyr
145 150 155 160

Tyr Gln Asn Val Met Leu Val Phe Glu Gln Asp Asn Tyr Cys Asp Phe
165 170 175

Glu Ile Gln Phe Glu Met Val His Asn Val Leu His Ala Trp Leu Gly
180 185 190

Gly Arg Ala Thr Tyr Ser Ile Ser Ser Leu Asp Tyr Ser Ala Phe Asp
195 200 205

```
Pro Val Phe Phe Leu His His Ala Asn Thr Asp Arg Leu Trp Ala Ile
    210                 215                 220

Trp Gln Glu Leu Gln Arg Tyr Arg Lys Lys Pro Tyr Asn Glu Ala Asp
225                 230                 235                 240

Cys Ala Ile Asn Leu Met Arg Lys Pro Leu His Pro Phe Asp Asn Ser
                245                 250                 255

Asp Leu Asn His Asp Pro Val Thr Phe Lys Tyr Ser Lys Pro Thr Asp
            260                 265                 270

Gly Phe Asp Tyr Gln Asn Asn Phe Gly Tyr Lys Tyr Asp Asn Leu Glu
        275                 280                 285

Phe Asn His Phe Ser Ile Pro Arg Leu Glu Glu Ile Ile Arg Ile Arg
    290                 295                 300

Gln Arg Gln Asp Arg Val Phe Ala Gly Phe Leu Leu His Asn Ile Gly
305                 310                 315                 320

Thr Ser Ala Thr Val Glu Ile Phe Val Cys Val Pro Thr Thr Ser Gly
                325                 330                 335

Glu Gln Asn Cys Glu Asn Lys Ala Gly Thr Phe Ala Val Leu Gly Gly
            340                 345                 350

Glu Thr Glu Met Ala Phe His Phe Asp Arg Leu Tyr Arg Phe Asp Ile
        355                 360                 365

Ser Glu Thr Leu Arg Asp Leu Gly Ile Gln Leu Asp Ser His Asp Phe
    370                 375                 380

Asp Leu Ser Ile Lys Ile Gln Gly Val Asn Gly Ser Tyr Leu Asp Pro
385                 390                 395                 400

His Ile Leu Pro Glu Pro Ser Leu Ile Phe Val Pro Gly Ser
                405                 410
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<210> 68
<211> 419
<212> PRT
<213> Haliotis tuberculata

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<400> 68
Ser Ser Phe Leu Arg Pro Asp Gly His Ser Asp Asp Ile Leu Val Arg
  1               5                  10                  15

Lys Glu Val Asn Ser Leu Thr Thr Arg Glu Thr Ala Ser Leu Ile His
            20                  25                  30

Ala Leu Lys Ser Met Gln Glu Asp His Ser Pro Asp Gly Phe Gln Ala
        35                  40                  45
```

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Ile Ala Ser Phe His Ala Leu Pro Pro Leu Cys Pro Ser Pro Ser Ala
     50                  55                  60

Ala His Arg Tyr Ala Cys Cys Val His Gly Met Ala Thr Phe Pro Gln
 65                  70                  75                  80

Trp His Arg Leu Tyr Thr Val Gln Phe Gln Asp Ala Leu Arg Arg His
                85                  90                  95

Gly Ala Thr Val Gly Val Pro Tyr Trp Asp Trp Leu Arg Pro Gln Ser
            100                 105                 110

His Leu Pro Glu Leu Val Thr Met Glu Thr Tyr His Asp Ile Trp Ser
        115                 120                 125

Asn Arg Asp Phe Pro Asn Pro Phe Tyr Gln Ala Asn Ile Glu Phe Glu
    130                 135                 140

Gly Glu Asn Ile Thr Thr Glu Arg Glu Val Ile Ala Asp Lys Leu Phe
145                 150                 155                 160

Val Lys Gly Gly His Val Phe Asp Lys Leu Val Leu Gln Thr Ser His
                165                 170                 175

Pro Ser Ala Glu Gln Glu Asn Tyr Cys Asp Phe Glu Ile Gln Phe Glu
            180                 185                 190

Ile Leu His Asn Gly Val His Thr Trp Val Gly Gly Ser Arg Thr Tyr
        195                 200                 205

Ser Ile Gly His Leu His Tyr Ala Phe Tyr Asp Pro Leu Phe Tyr Leu
    210                 215                 220

His His Phe Gln Thr Asp Arg Ile Trp Ala Ile Trp Gln Glu Leu Gln
225                 230                 235                 240

Glu Gln Arg Gly Leu Ser Gly Asp Glu Ala His Cys Ala Leu Glu Gln
                245                 250                 255

Met Arg Glu Pro Leu Lys Pro Phe Ser Phe Gly Ala Pro Tyr Asn Trp
            260                 265                 270

Asn Gln Leu Thr Gln Asp Phe Ser Arg Pro Glu Asp Thr Phe Asp Tyr
        275                 280                 285

Arg Lys Phe Gly Tyr Glu Tyr Asp Asn Leu Glu Phe Leu Gly Met Ser
    290                 295                 300

Val Ala Glu Leu Asp Gln Tyr Ile Ile Glu His Gln Glu Asn Asp Arg
305                 310                 315                 320

Val Phe Ala Gly Phe Leu Leu Ser Gly Phe Gly Gly Ser Ala Ser Val
                325                 330                 335

Asn Phe Gln Val Cys Arg Ala Asp Ser Thr Cys Gln Asp Ala Gly Tyr
            340                 345                 350
```

Phe Thr Val Leu Gly Gly Ser Ala Glu Met Ala Trp Ala Phe Asp Arg
355 360 365

Leu Tyr Lys Tyr Asp Ile Thr Glu Thr Leu Glu Lys Met His Leu Arg
370 375 380

Tyr Asp Asp Asp Phe Thr Ile Ser Val Ser Leu Thr Ala Asn Asn Gly
385 390 395 400

Thr Val Leu Ser Ser Ser Leu Ile Pro Thr Pro Ser Val Ile Phe Gln
405 410 415

Arg Gly His

<210> 69
<211> 378
<212> PRT
<213> Megathura crenulata

<400> 69
Arg Tyr Gln Ala Thr Ala Glu Tyr His Gly Leu Pro Ala Arg Cys Pro
1 5 10 15

Arg Pro Asp Ala Lys Asp Arg Tyr Ala Cys Cys Val His Gly Met Pro
20 25 30

Ile Phe Pro His Trp His Arg Leu Phe Val Thr Gln Val Glu Asp Ala
35 40 45

Leu Val Gly Arg Gly Ala Thr Ile Gly Ile Pro Tyr Trp Asp Trp Thr
50 55 60

Glu Pro Met Thr His Ile Pro Gly Leu Ala Gly Asn Lys Thr Tyr Val
65 70 75 80

Asp Ser His Gly Ala Ser His Thr Asn Pro Phe His Ser Ser Val Ile
85 90 95

Ala Phe Glu Glu Asn Ala Pro His Thr Lys Arg Gln Ile Asp Gln Arg
100 105 110

Leu Phe Lys Pro Ala Thr Phe Gly His His Thr Asp Leu Phe Asn Gln
115 120 125

Ile Leu Tyr Ala Phe Glu Gln Glu Asp Tyr Cys Asp Phe Glu Val Gln
130 135 140

Phe Glu Ile Thr His Asn Thr Ile His Ala Trp Thr Gly Gly Ser Glu
145 150 155 160

His Phe Ser Met Ser Ser Leu His Tyr Thr Ala Phe Asp Pro Leu Phe
165 170 175

Tyr Phe His His Ser Asn Val Asp Arg Leu Trp Ala Val Trp Gln Ala
180 185 190

```
Leu Gln Met Arg Arg His Lys Pro Tyr Arg Ala His Cys Ala Ile Ser
        195                 200                 205

Leu Glu His Met His Leu Lys Pro Phe Ala Phe Ser Ser Pro Leu Asn
    210                 215                 220

Asn Asn Glu Lys Thr His Ala Asn Ala Met Pro Asn Lys Ile Tyr Asp
225                 230                 235                 240

Tyr Glu Asn Val Leu His Tyr Thr Tyr Glu Asp Leu Thr Phe Gly Gly
                245                 250                 255

Ile Ser Leu Glu Asn Ile Glu Lys Met Ile His Glu Asn Gln Gln Glu
            260                 265                 270

Asp Arg Ile Tyr Ala Gly Phe Leu Leu Ala Gly Ile Arg Thr Ser Ala
        275                 280                 285

Asn Val Asp Ile Phe Ile Lys Thr Thr Asp Ser Val Gln His Lys Ala
    290                 295                 300

Gly Thr Phe Ala Val Leu Gly Gly Ser Lys Glu Met Lys Trp Gly Phe
305                 310                 315                 320

Asp Arg Val Phe Lys Phe Asp Ile Thr His Val Leu Lys Asp Leu Asp
                325                 330                 335

Leu Thr Ala Asp Gly Asp Phe Glu Val Thr Val Asp Ile Thr Glu Val
            340                 345                 350

Asp Gly Thr Lys Leu Ala Ser Ser Leu Ile Pro His Ala Ser Val Ile
        355                 360                 365

Arg Glu His Ala Arg Gly Lys Leu Asn Arg
    370                 375


<210> 70
<211> 419
<212> PRT
<213> Megathura crenulata

<400> 70
Asp Ser Ala His Thr Asp Asp Gly His Thr Glu Pro Val Met Ile Arg
  1               5                  10                  15

Lys Asp Ile Thr Gln Leu Asp Lys Arg Gln Gln Leu Ser Leu Val Lys
             20                  25                  30

Ala Leu Glu Ser Met Lys Ala Asp His Ser Ser Asp Gly Phe Gln Ala
         35                  40                  45

Ile Ala Ser Phe His Ala Leu Pro Pro Leu Cys Pro Ser Pro Ala Ala
     50                  55                  60
```

Ser Lys Arg Phe Ala Cys Cys Val His Gly Met Ala Thr Phe Pro Gln
65 70 75 80

Trp His Arg Leu Tyr Thr Val Gln Phe Gln Asp Ser Leu Arg Lys His
85 90 95

Gly Ala Val Val Gly Leu Pro Tyr Trp Asp Trp Thr Leu Pro Arg Ser
100 105 110

Glu Leu Pro Glu Leu Leu Thr Val Ser Thr Ile His Asp Pro Glu Thr
115 120 125

Gly Arg Asp Ile Pro Asn Pro Phe Ile Gly Ser Lys Ile Glu Phe Glu
130 135 140

Gly Glu Asn Val His Thr Lys Arg Asp Ile Asn Arg Asp Arg Leu Phe
145 150 155 160

Gln Gly Ser Thr Lys Thr His His Asn Trp Phe Ile Glu Gln Ala Leu
165 170 175

Leu Ala Leu Glu Gln Thr Asn Tyr Cys Asp Phe Glu Val Gln Phe Glu
180 185 190

Ile Met His Asn Gly Val His Thr Trp Val Gly Gly Lys Glu Pro Tyr
195 200 205

Gly Ile Gly His Leu His Tyr Ala Ser Tyr Asp Pro Leu Phe Tyr Ile
210 215 220

His His Ser Gln Thr Asp Arg Ile Trp Ala Ile Trp Gln Ser Leu Gln
225 230 235 240

Arg Phe Arg Gly Leu Ser Gly Ser Glu Ala Asn Cys Ala Val Asn Leu
245 250 255

Met Lys Thr Pro Leu Lys Pro Phe Ser Phe Gly Ala Pro Tyr Asn Leu
260 265 270

Asn Asp His Thr His Asp Phe Ser Lys Pro Glu Asp Thr Phe Asp Tyr
275 280 285

Gln Lys Phe Gly Tyr Ile Tyr Asp Thr Leu Glu Phe Ala Gly Trp Ser
290 295 300

Ile Arg Gly Ile Asp His Ile Val Arg Asn Arg Gln Glu His Ser Arg
305 310 315 320

Val Phe Ala Gly Phe Leu Leu Glu Gly Phe Gly Thr Ser Ala Thr Val
325 330 335

Asp Phe Gln Val Cys Arg Thr Ala Gly Asp Cys Glu Asp Ala Gly Tyr
340 345 350

Phe Thr Val Leu Gly Gly Glu Lys Glu Met Pro Trp Ala Phe Asp Arg
355 360 365

```
Leu Tyr Lys Tyr Asp Ile Thr Glu Thr Leu Asp Lys Met Asn Leu Arg
    370                 375                 380

His Asp Glu Ile Phe Gln Ile Glu Val Thr Ile Thr Ser Tyr Asp Gly
385                 390                 395                 400

Thr Val Leu Asp Ser Gly Leu Ile Pro Thr Pro Ser Ile Ile Tyr Asp
                405                 410                 415

Pro Ala His
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<210> 71
<211> 418
<212> PRT
<213> Megathura crenulata

<400> 71

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His Asp Ile Ser Ser His His Leu Ser Leu Asn Lys Val Arg His Asp
  1               5                  10                  15

Leu Ser Thr Leu Ser Glu Arg Asp Ile Gly Ser Leu Lys Tyr Ala Leu
             20                  25                  30

Ser Ser Leu Gln Ala Asp Thr Ser Ala Asp Gly Phe Ala Ala Ile Ala
         35                  40                  45

Ser Phe His Gly Leu Pro Ala Lys Cys Asn Asp Ser His Asn Asn Glu
     50                  55                  60

Val Ala Cys Cys Ile His Gly Met Pro Thr Phe Pro His Trp His Arg
 65                  70                  75                  80

Leu Tyr Thr Leu Gln Phe Glu Gln Ala Leu Arg Arg His Gly Ser Ser
                 85                  90                  95

Val Ala Val Pro Tyr Trp Asp Trp Thr Lys Pro Ile His Asn Ile Pro
            100                 105                 110

His Leu Phe Thr Asp Lys Glu Tyr Tyr Asp Val Trp Arg Asn Lys Val
        115                 120                 125

Met Pro Asn Pro Phe Ala Arg Gly Tyr Val Pro Ser His Asp Thr Tyr
    130                 135                 140

Thr Val Arg Asp Val Gln Glu Gly Leu Phe His Leu Thr Ser Thr Gly
145                 150                 155                 160

Glu His Ser Ala Leu Leu Asn Gln Ala Leu Leu Ala Leu Glu Gln His
                165                 170                 175

Asp Tyr Cys Asp Phe Ala Val Gln Phe Glu Val Met His Asn Thr Ile
            180                 185                 190

His Tyr Leu Val Gly Gly Pro Gln Val Tyr Ser Leu Ser Ser Leu His
        195                 200                 205
```

Tyr Ala Ser Tyr Asp Pro Ile Phe Phe Ile His His Ser Phe Val Asp
210 215 220

Lys Val Trp Ala Val Trp Gln Ala Leu Gln Glu Lys Arg Gly Leu Pro
225 230 235 240

Ser Asp Arg Ala Asp Cys Ala Val Ser Leu Met Thr Gln Asn Met Arg
245 250 255

Pro Phe His Tyr Glu Ile Asn His Asn Gln Phe Thr Lys Lys His Ala
260 265 270

Val Pro Asn Asp Val Phe Lys Tyr Glu Leu Leu Gly Tyr Arg Tyr Asp
275 280 285

Asn Leu Glu Ile Gly Gly Met Asn Leu His Glu Ile Glu Lys Glu Ile
290 295 300

Lys Asp Lys Gln His His Val Arg Val Phe Ala Gly Phe Leu Leu His
305 310 315 320

Gly Ile Arg Thr Ser Ala Asp Val Gln Phe Gln Ile Cys Lys Thr Ser
325 330 335

Glu Asp Cys His His Gly Gly Gln Ile Phe Val Leu Gly Gly Thr Lys
340 345 350

Glu Met Ala Trp Ala Tyr Asn Arg Leu Phe Lys Tyr Asp Ile Thr His
355 360 365

Ala Leu His Asp Ala His Ile Thr Pro Glu Asp Val Phe His Pro Ser
370 375 380

Glu Pro Phe Phe Ile Lys Val Ser Val Thr Ala Val Asn Gly Thr Val
385 390 395 400

Leu Pro Ala Ser Ile Leu His Ala Pro Thr Ile Ile Tyr Glu Pro Gly
405 410 415

Leu Gly

<210> 72
<211> 241
<212> PRT
<213> Megathura crenulata

<400> 72
Asp His His Glu Asp His His Ser Ser Ser Met Ala Gly His Gly Val
1 5 10 15

Arg Lys Glu Ile Asn Thr Leu Thr Thr Ala Glu Val Asp Asn Leu Lys
20 25 30

Asp Ala Met Arg Ala Val Met Ala Asp His Gly Pro Asn Gly Tyr Gln
35 40 45

Ala Ile Ala Ala Phe His Gly Asn Pro Pro Met Cys Pro Met Pro Asp
50 55 60

Gly Lys Asn Tyr Ser Cys Cys Thr His Gly Met Ala Thr Phe Pro His
65 70 75 80

Trp His Arg Leu Tyr Thr Lys Gln Met Glu Asp Ala Leu Thr Ala His
85 90 95

Gly Ala Arg Val Gly Leu Pro Tyr Trp Asp Gly Thr Thr Ala Phe Thr
100 105 110

Ala Leu Pro Thr Phe Val Thr Asp Glu Glu Asp Asn Pro Phe His His
115 120 125

Gly His Ile Asp Tyr Leu Gly Val Asp Thr Thr Arg Ser Pro Arg Asp
130 135 140

Lys Leu Phe Asn Asp Pro Glu Arg Gly Ser Glu Ser Phe Phe Tyr Arg
145 150 155 160

Gln Val Leu Leu Ala Leu Glu Gln Thr Asp Phe Cys Gln Phe Glu Val
165 170 175

Gln Phe Glu Ile Thr His Asn Ala Ile His Ser Trp Thr Gly Gly Leu
180 185 190

Thr Pro Tyr Gly Met Ser Thr Leu Glu Tyr Thr Thr Tyr Asp Pro Leu
195 200 205

Phe Trp Leu His His Ala Asn Thr Asp Arg Ile Trp Ala Ile Trp Gln
210 215 220

Ala Leu Gln Glu Tyr Arg Gly Leu Pro Tyr Asp His Ala Asn Cys Glu
225 230 235 240

Ile

<210> 73
<211> 98
<212> PRT
<213> Megathura crenulata

<400> 73
Lys His His Glu Lys His His Glu Asp His His Glu Asp Ile Leu Val
1 5 10 15

Arg Lys Asn Ile His Ser Leu Ser His His Glu Ala Glu Glu Leu Arg
20 25 30

Asp Ala Leu Tyr Lys Leu Gln Asn Asp Glu Ser His Gly Gly Tyr Glu
35 40 45

His Ile Ala Gly Phe His Gly Tyr Pro Asn Leu Cys Pro Glu Lys Gly
50 55 60

Asp Glu Lys Tyr Pro Cys Cys Val His Gly Met Ser Ile Phe Pro His
65 70 75 80

Trp His Arg Leu His Thr Ile Gln Leu Glu Arg Ala Leu Lys Lys His
85 90 95

Gly Ser

<210> 74
<211> 314
<212> PRT
<213> Megathura crenulata

<400> 74
Gly Leu Pro Tyr Trp Asp Trp Thr Met Pro Met Ser His Leu Pro Glu
1 5 10 15

Leu Ala Thr Ser Glu Thr Tyr Leu Asp Pro Val Thr Gly Glu Thr Lys
20 25 30

Asn Asn Pro Phe His His Ala Gln Val Ala Phe Glu Asn Gly Val Thr
35 40 45

Ser Arg Asn Pro Asp Ala Lys Leu Phe Met Lys Pro Thr Tyr Gly Asp
50 55 60

His Thr Tyr Leu Phe Asp Ser Met Ile Tyr Ala Phe Glu Gln Glu Asp
65 70 75 80

Phe Cys Asp Phe Glu Val Gln Tyr Glu Leu Thr His Asn Ala Ile His
85 90 95

Ala Trp Val Gly Gly Ser Glu Lys Tyr Ser Met Ser Ser Leu His Tyr
100 105 110

Thr Ala Phe Asp Pro Ile Phe Tyr Leu His His Ser Asn Val Asp Arg
115 120 125

Leu Trp Ala Ile Trp Gln Ala Leu Gln Ile Arg Arg Gly Lys Ser Tyr
130 135 140

Lys Ala His Cys Ala Ser Ser Gln Glu Arg Glu Pro Leu Lys Pro Phe
145 150 155 160

Ala Phe Ser Ser Pro Leu Asn Asn Asn Glu Lys Thr Tyr His Asn Ser
165 170 175

Val Pro Thr Asn Val Tyr Asp Tyr Val Gly Val Leu His Tyr Arg Tyr
180 185 190

Asp Asp Leu Gln Phe Gly Gly Met Thr Met Ser Glu Leu Glu Glu Tyr
195 200 205

Ile His Lys Gln Thr Gln His Asp Arg Thr Phe Ala Gly Phe Phe Leu
210 215 220

Ser Tyr Ile Gly Thr Ser Ala Ser Val Asp Ile Phe Ile Asn Arg Glu
225 230 235 240

Gly His Asp Lys Tyr Lys Val Gly Ser Phe Val Val Leu Gly Gly Ser
245 250 255

Lys Glu Met Lys Trp Gly Phe Asp Arg Met Tyr Lys Tyr Glu Ile Thr
260 265 270

Glu Ala Leu Lys Thr Leu Asn Val Ala Val Asp Asp Gly Phe Ser Ile
275 280 285

Thr Val Glu Ile Thr Asp Val Asp Gly Ser Pro Pro Ser Ala Asp Leu
290 295 300

Ile Pro Pro Pro Ala Ile Ile Phe Glu Arg
305 310

<210> 75
<211> 416
<212> PRT
<213> Megathura crenulata

<400> 75
Ala Asp Ala Lys Asp Phe Gly His Ser Arg Lys Ile Arg Lys Ala Val
1 5 10 15

Asp Ser Leu Thr Val Glu Glu Gln Thr Ser Leu Arg Arg Ala Met Ala
20 25 30

Asp Leu Gln Asp Asp Lys Thr Ser Gly Gly Phe Gln Gln Ile Ala Ala
35 40 45

Phe His Gly Glu Pro Lys Trp Cys Pro Ser Pro Glu Ala Glu Lys Lys
50 55 60

Phe Ala Cys Cys Val His Gly Met Ala Val Phe Pro His Trp His Arg
65 70 75 80

Leu Leu Thr Val Gln Gly Glu Asn Ala Leu Arg Lys His Gly Phe Thr
85 90 95

Gly Gly Leu Pro Tyr Trp Asp Trp Thr Arg Ser Met Ser Ala Leu Pro
100 105 110

His Phe Val Ala Asp Pro Thr Tyr Asn Asp Ala Ile Ser Ser Gln Glu
115 120 125

Glu Asp Asn Pro Trp His His Gly His Ile Asp Ser Val Gly His Asp
130 135 140

Thr Thr Arg Asp Val Arg Asp Asp Leu Tyr Gln Ser Pro Gly Phe Gly
145 150 155 160

His Tyr Thr Asp Ile Ala Lys Gln Val Leu Leu Ala Phe Glu Gln Asp
165 170 175

Asp Phe Cys Asp Phe Glu Val Gln Phe Glu Ile Ala His Asn Phe Ile
180 185 190

His Ala Leu Val Gly Gly Asn Glu Pro Tyr Ser Met Ser Ser Leu Arg
195 200 205

Tyr Thr Thr Tyr Asp Pro Ile Phe Phe Leu His Arg Ser Asn Thr Asp
210 215 220

Arg Leu Trp Ala Ile Trp Gln Ala Leu Gln Lys Tyr Arg Gly Lys Pro
225 230 235 240

Tyr Asn Thr Ala Asn Cys Ala Ile Ala Ser Met Arg Lys Pro Leu Gln
245 250 255

Pro Phe Gly Leu Asp Ser Val Ile Asn Pro Asp Asp Glu Thr Arg Glu
260 265 270

His Ser Val Pro Phe Arg Val Phe Asp Tyr Lys Asn Asn Phe Asp Tyr
275 280 285

Glu Tyr Glu Ser Leu Ala Phe Asn Gly Leu Ser Ile Ala Gln Leu Asp
290 295 300

Arg Glu Leu Gln Arg Arg Lys Ser His Asp Arg Val Phe Ala Gly Phe
305 310 315 320

Leu Leu His Glu Ile Gly Gln Ser Ala Leu Val Lys Phe Tyr Val Cys
325 330 335

Lys His Asn Val Ser Asp Cys Asp His Tyr Ala Gly Glu Phe Tyr Ile
340 345 350

Leu Gly Asp Glu Ala Glu Met Pro Trp Arg Tyr Asp Arg Val Tyr Lys
355 360 365

Tyr Glu Ile Thr Gln Gln Leu His Asp Leu Asp Leu His Val Gly Asp
370 375 380

Asn Phe Phe Leu Lys Tyr Glu Ala Phe Asp Leu Asn Gly Gly Ser Leu
385 390 395 400

Gly Gly Ser Ile Phe Ser Gln Pro Ser Val Ile Phe Glu Pro Ala Ala
405 410 415

<210> 76
<211> 419
<212> PRT

<213> Megathura crenulata

<400> 76

Gly Ser His Gln Ala Asp Glu Tyr Arg Glu Ala Val Thr Ser Ala Ser
1 5 10 15

His Ile Arg Lys Asn Ile Arg Asp Leu Ser Glu Gly Glu Ile Glu Ser
20 25 30

Ile Arg Ser Ala Phe Leu Gln Ile Gln Lys Glu Gly Ile Tyr Glu Asn
35 40 45

Ile Ala Lys Phe His Gly Lys Pro Gly Leu Cys Glu His Asp Gly His
50 55 60

Pro Val Ala Cys Cys Val His Gly Met Pro Thr Phe Pro His Trp His
65 70 75 80

Arg Leu Tyr Val Leu Gln Val Glu Asn Ala Leu Leu Glu Arg Gly Ser
85 90 95

Ala Val Ala Val Pro Tyr Trp Asp Trp Thr Glu Lys Ala Asp Ser Leu
100 105 110

Pro Ser Leu Ile Asn Asp Ala Thr Tyr Phe Asn Ser Arg Ser Gln Thr
115 120 125

Phe Asp Pro Asn Pro Phe Phe Arg Gly His Ile Ala Phe Glu Asn Ala
130 135 140

Val Thr Ser Arg Asp Pro Gln Pro Glu Leu Trp Asp Asn Lys Asp Phe
145 150 155 160

Tyr Glu Asn Val Met Leu Ala Leu Glu Gln Asp Asn Phe Cys Asp Phe
165 170 175

Glu Ile Gln Leu Glu Leu Ile His Asn Ala Leu His Ser Arg Leu Gly
180 185 190

Gly Arg Ala Lys Tyr Ser Leu Ser Ser Leu Asp Tyr Thr Ala Phe Asp
195 200 205

Pro Val Phe Phe Leu His His Ala Asn Val Asp Arg Ile Trp Ala Ile
210 215 220

Trp Gln Asp Leu Gln Arg Tyr Arg Lys Lys Pro Tyr Asn Glu Ala Asp
225 230 235 240

Cys Ala Val Asn Glu Met Arg Lys Pro Leu Gln Pro Phe Asn Asn Pro
245 250 255

Glu Leu Asn Ser Asp Ser Met Thr Leu Lys His Asn Leu Pro Gln Asp
260 265 270

Ser Phe Asp Tyr Gln Asn Arg Phe Arg Tyr Gln Tyr Asp Asn Leu Gln
275 280 285

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Phe Asn His Phe Ser Ile Gln Lys Leu Asp Gln Thr Ile Gln Ala Arg
    290                 295                 300

Lys Gln His Asp Arg Val Phe Ala Gly Phe Ile Leu His Asn Ile Gly
305                 310                 315                 320

Thr Ser Ala Val Val Asp Ile Tyr Ile Cys Val Glu Gln Gly Gly Glu
                325                 330                 335

Gln Asn Cys Lys Thr Lys Ala Gly Ser Phe Thr Ile Leu Gly Gly Glu
            340                 345                 350

Thr Glu Met Pro Phe His Phe Asp Arg Leu Tyr Lys Phe Asp Ile Thr
        355                 360                 365

Ser Ala Leu His Lys Leu Gly Val Pro Leu Asp Gly His Gly Phe Asp
    370                 375                 380

Ile Lys Val Asp Val Arg Ala Val Asn Gly Ser His Leu Asp Gln His
385                 390                 395                 400

Ile Leu Asn Glu Pro Ser Leu Leu Phe Val Pro Gly Glu Arg Lys Asn
                405                 410                 415

Ile Tyr Tyr
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<210> 77
<211> 413
<212> PRT
<213> Megathura crenulata

<400> 77

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Asp Gly Leu Ser Gln His Asn Leu Val Arg Lys Glu Val Ser Ser Leu
  1               5                  10                  15

Thr Thr Leu Glu Lys His Phe Leu Arg Lys Ala Leu Lys Asn Met Gln
             20                  25                  30

Ala Asp Asp Ser Pro Asp Gly Tyr Gln Ala Ile Ala Ser Phe His Ala
         35                  40                  45

Leu Pro Pro Leu Cys Pro Ser Pro Ser Ala Ala His Arg His Ala Cys
     50                  55                  60

Cys Leu His Gly Met Ala Thr Phe Pro Gln Trp His Arg Leu Tyr Thr
 65                  70                  75                  80

Val Gln Phe Glu Asp Ser Leu Lys Arg His Gly Ser Ile Val Gly Leu
                 85                  90                  95

Pro Tyr Trp Asp Trp Leu Lys Pro Gln Ser Ala Leu Pro Asp Leu Val
            100                 105                 110

Thr Gln Glu Thr Tyr Glu His Leu Phe Ser His Lys Thr Phe Pro Asn
        115                 120                 125
```

Pro Phe Leu Lys Ala Asn Ile Glu Phe Glu Gly Glu Gly Val Thr Thr
130 135 140

Glu Arg Asp Val Asp Ala Glu His Leu Phe Ala Lys Gly Asn Leu Val
145 150 155 160

Tyr Asn Asn Trp Phe Cys Asn Gln Ala Leu Tyr Ala Leu Glu Gln Glu
165 170 175

Asn Tyr Cys Asp Phe Glu Ile Gln Phe Glu Ile Leu His Asn Gly Ile
180 185 190

His Ser Trp Val Gly Gly Ser Lys Thr His Ser Ile Gly His Leu His
195 200 205

Tyr Ala Ser Tyr Asp Pro Leu Phe Tyr Ile His His Ser Gln Thr Asp
210 215 220

Arg Ile Trp Ala Ile Trp Gln Ala Leu Gln Glu His Arg Gly Leu Ser
225 230 235 240

Gly Lys Glu Ala His Cys Ala Leu Glu Gln Met Lys Asp Pro Leu Lys
245 250 255

Pro Phe Ser Phe Gly Ser Pro Tyr Asn Leu Asn Lys Arg Thr Gln Glu
260 265 270

Phe Ser Lys Pro Glu Asp Thr Phe Asp Tyr His Arg Phe Gly Tyr Glu
275 280 285

Tyr Asp Ser Leu Glu Phe Val Gly Met Ser Val Ser Ser Leu His Asn
290 295 300

Tyr Ile Lys Gln Gln Gln Glu Ala Asp Arg Val Phe Ala Gly Phe Leu
305 310 315 320

Leu Lys Gly Phe Gly Gln Ser Ala Ser Val Ser Phe Asp Ile Cys Arg
325 330 335

Pro Asp Gln Ser Cys Gln Glu Ala Gly Tyr Phe Ser Val Leu Gly Gly
340 345 350

Ser Ser Glu Met Pro Trp Gln Phe Asp Arg Leu Tyr Lys Tyr Asp Ile
355 360 365

Thr Lys Thr Leu Lys Asp Met Lys Leu Arg Tyr Asp Asp Thr Phe Thr
370 375 380

Ile Lys Val His Ile Lys Asp Ile Ala Gly Ala Glu Leu Asp Ser Asp
385 390 395 400

Leu Ile Pro Thr Pro Ser Val Leu Leu Glu Glu Gly Lys
405 410

<210> 78
<211> 417
<212> PRT
<213> Megathura crenulata

<400> 78
His Gly Ile Asn Val Arg His Val Gly Arg Asn Arg Ile Arg Met Glu
1 5 10 15

Leu Ser Glu Leu Thr Glu Arg Asp Leu Ala Ser Leu Lys Ser Ala Met
20 25 30

Arg Ser Leu Gln Ala Asp Asp Gly Val Asn Gly Tyr Gln Ala Ile Ala
35 40 45

Ser Phe His Gly Leu Pro Ala Ser Cys His Asp Asp Glu Gly His Glu
50 55 60

Ile Ala Cys Cys Ile His Gly Met Pro Val Phe Pro His Trp His Arg
65 70 75 80

Leu Tyr Thr Leu Gln Met Asp Met Ala Leu Leu Ser His Gly Ser Ala
85 90 95

Val Ala Ile Pro Tyr Trp Asp Trp Thr Lys Pro Ile Ser Lys Leu Pro
100 105 110

Asp Leu Phe Thr Ser Pro Glu Tyr Tyr Asp Pro Trp Arg Asp Ala Val
115 120 125

Val Asn Asn Pro Phe Ala Lys Gly Tyr Ile Lys Ser Glu Asp Ala Tyr
130 135 140

Thr Val Arg Asp Pro Gln Asp Ile Leu Tyr His Leu Gln Asp Glu Thr
145 150 155 160

Gly Thr Ser Val Leu Leu Asp Gln Thr Leu Leu Ala Leu Glu Gln Thr
165 170 175

Asp Phe Cys Asp Phe Glu Val Gln Phe Glu Val Val His Asn Ala Ile
180 185 190

His Tyr Leu Val Gly Gly Arg Gln Val Tyr Ala Leu Ser Ser Gln His
195 200 205

Tyr Ala Ser Tyr Asp Pro Ala Phe Phe Ile His His Ser Phe Val Asp
210 215 220

Lys Ile Trp Ala Val Trp Gln Ala Leu Gln Lys Lys Arg Lys Arg Pro
225 230 235 240

Tyr His Lys Ala Asp Cys Ala Leu Asn Met Met Thr Lys Pro Met Arg
245 250 255

Pro Phe Ala His Asp Phe Asn His Asn Gly Phe Thr Lys Met His Ala
260 265 270

Val Pro Asn Thr Leu Phe Asp Phe Gln Asp Leu Phe Tyr Thr Tyr Asp
275 280 285

Asn Leu Glu Ile Ala Gly Met Asn Val Asn Gln Leu Glu Ala Glu Ile
290 295 300

Asn Arg Arg Lys Ser Gln Thr Arg Val Phe Ala Gly Phe Leu Leu His
305 310 315 320

Gly Ile Gly Arg Ser Ala Asp Val Arg Phe Trp Ile Cys Lys Thr Ala
325 330 335

Asp Asp Cys His Ala Ser Gly Met Ile Phe Ile Leu Gly Gly Ser Lys
340 345 350

Glu Met His Trp Ala Tyr Asp Arg Asn Phe Lys Tyr Asp Ile Thr Gln
355 360 365

Ala Leu Lys Ala Gln Ser Ile His Pro Glu Asp Val Phe Asp Thr Asp
370 375 380

Ala Pro Phe Phe Ile Lys Val Glu Val His Gly Val Asn Lys Thr Ala
385 390 395 400

Leu Pro Ser Ser Ala Ile Pro Ala Pro Thr Ile Ile Tyr Ser Ala Gly
405 410 415

Glu

<210> 79
<211> 395
<212> PRT
<213> Megathura crenulata

<400> 79
Asp His Ile Ala Gly Ser Gly Val Arg Lys Asp Val Thr Ser Leu Thr
1 5 10 15

Ala Ser Glu Ile Glu Asn Leu Arg His Ala Leu Gln Ser Val Met Asp
20 25 30

Asp Asp Gly Pro Asn Gly Phe Gln Ala Ile Ala Ala Tyr His Gly Ser
35 40 45

Pro Pro Met Cys His Met Xaa Asp Gly Arg Asp Val Ala Cys Cys Thr
50 55 60

His Gly Met Ala Ser Phe Pro His Trp His Arg Leu Phe Val Lys Gln
65 70 75 80

Met Glu Asp Ala Leu Ala Ala His Gly Ala His Ile Gly Ile Pro Tyr
85 90 95

Trp Asp Trp Thr Ser Ala Phe Ser His Leu Pro Ala Leu Val Thr Asp
100 105 110

His Glu His Asn Pro Phe His His Gly His Ile Ala His Arg Asn Val
115 120 125

Asp Thr Ser Arg Ser Pro Arg Asp Met Leu Phe Asn Asp Pro Glu His
130 135 140

Gly Ser Glu Ser Phe Phe Tyr Arg Gln Val Leu Leu Ala Leu Glu Gln
145 150 155 160

Thr Asp Phe Cys Gln Phe Glu Val Gln Phe Glu Ile Thr His Asn Ala
165 170 175

Ile His Ser Trp Thr Gly Gly His Thr Pro Tyr Gly Met Ser Ser Leu
180 185 190

Glu Tyr Thr Ala Tyr Asp Pro Leu Phe Tyr Leu His His Ser Asn Thr
195 200 205

Asp Arg Ile Trp Ala Ile Trp Gln Ala Leu Gln Lys Tyr Arg Gly Phe
210 215 220

Gln Tyr Asn Ala Ala His Cys Asp Ile Gln Val Leu Lys Gln Pro Leu
225 230 235 240

Lys Pro Phe Ser Glu Ser Arg Asn Pro Asn Pro Val Thr Arg Ala Asn
245 250 255

Ser Arg Ala Val Asp Ser Phe Asp Tyr Glu Arg Leu Asn Tyr Gln Tyr
260 265 270

Asp Thr Leu Thr Phe His Gly His Ser Ile Ser Glu Leu Asp Ala Met
275 280 285

Leu Gln Glu Arg Lys Lys Glu Glu Arg Thr Phe Ala Ala Phe Leu Leu
290 295 300

His Gly Phe Gly Ala Ser Ala Asp Val Ser Phe Asp Val Cys Thr Pro
305 310 315 320

Asp Gly His Cys Ala Phe Ala Gly Thr Phe Ala Val Leu Gly Gly Glu
325 330 335

Leu Glu Met Pro Trp Ser Phe Glu Arg Leu Phe Arg Tyr Asp Ile Thr
340 345 350

Lys Val Leu Lys Gln Met Asn Leu His Tyr Asp Ser Glu Phe His Phe
355 360 365

Glu Leu Lys Ile Val Gly Thr Asp Gly Thr Glu Leu Pro Ser Asp Arg
370 375 380

Ile Lys Ser Pro Thr Ile Glu His His Gly Gly
385 390 395

<210> 80
<211> 1266
<212> DNA
<213> Haliotis tuberculata

<400> 80
cttgttcagt ttctactcgt cgcccttgtg gtgggggctg gagcagacaa cgtcgtcaga 60
aaggacgtga gtcacctcac ggatgacgag gtgcaagctc tccacggcgc cctccatgac 120
gtcactgcat ctacagggcc tctgagtttc gaagacataa catcttacca tgccgcacca 180
gcgtcgtgtg actacaaggg acggaagatc gcctgctgtg tccacggtat gcccagtttc 240
cccttctggc acagggcata tgtcgtccaa gccgagcggg cactgttgtc caaacggaag 300
actgtcggaa tgccttactg ggactggacg caaacgctga ctcacttacc atctcttgtg 360
actgaaccca tctacattga cagtaaaggt ggaaaggctc aaaccaacta ctggtaccgc 420
ggcgagatag cgttcatcaa taagaagact gcgcgagctg tagatgatcg cctattcgag 480
aaggtggagc ctggtcacta cacacatctt atggagactg tcctcgacgc tctcgaacag 540
gacgaattct gtaaatttga aatccagttc gagttggctc ataatgctat ccattacttg 600
gttggcggta aatttgaata ttcaatgtca aacttggaat acacctccta cgaccccatc 660
ttcttcctcc accactccaa cgttgaccgc ctcttcgcca tctggcagcg tcttcaggaa 720
ctgcgaggaa agaatcccaa tgcaatggac tgtgcacatg aactcgctca ccagcaactc 780
caacccttca acagggacag caatccagtc cagctcacaa aggaccactc gacacctgct 840
gacctctttg attacaaaca acttggatac agctacgaca gcttaaacct gaatggaatg 900
acgccagaac agctgaaaac agaactagac gaacgccact ccaaagaacg tgcgtttgca 960
agcttccgac tcagtggctt tgggggttct gccaacgttg ttgtctatgc atgtgtccct 1020
gatgatgatc cacgcagtga tgactactgc gagaaagcag gcgacttctt cattcttggg 1080
ggtcaaagcg aaatgccgtg gagattctac agacccttct tctatgatgt aactgaagcg 1140
gtacatcacc ttggagtccc gctaagtggc cactactatg tgaaaacaga actcttcagc 1200
gtgaatggca cagcactttc acctgatctt cttcctcaac caactgttgc ctaccgacct 1260
gggaaa 1266

<210> 81
<211> 1257
<212> DNA
<213> Haliotis tuberculata

<400> 81
ggtcaccttg acccacctgt gcatcatcgc cacgatgacg atcttattgt tcgaaaaaat 60
atagatcatt tgactcgtga agaggaatac gagctaagga tggctctgga gagattccag 120
gccgacacat ccgttgatgg gtaccaggct acagtagagt accatggcct tcctgctcgt 180
tgtccacgac cagatgcaaa agtcaggttc gcctgttgta tgcatggcat ggcatccttc 240
cctcactggc accggctgtt cgttacccag gtggaagatg ctcttgtacg gcgtggatcg 300
cctatcggtg ttccttattg ggactggaca aaacctatga ctcaccttcc agacttggca 360
tcaaatgaga cgtacgtaga cccgtatgga catacacatc ataatccatt cttcaatgca 420
aatatatctt ttgaggaggg acaccatcac acgagcagga tgatagattc gaaactgttt 480
gccccagtcg cttttgggga gcattcccat ctgtttgatg gaatcctgta cgcatttgag 540
caggaagatt tctgcgactt tgagattcag tttgagttag tccataattc tattcatgcg 600
tggataggcg gttccgaaga ttactccatg gccaccctgc attacacagc ctttgacccc 660
attttctacc ttcatcattc caatgtcgat cgtctatggg caatctggca agctcttcaa 720
atcaggagac acaagccata tcaagcccac tgtgcacagt ctgtggaaca gttgccaatg 780
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<210> 82
<211> 1242
<212> DNA
<213> Haliotis tuberculata

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<210> 83
<211> 1239
<212> DNA
<213> Haliotis tuberculata

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<210> 84
<211> 1260
<212> DNA
<213> Haliotis tuberculata

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<210> 85
<211> 1251
<212> DNA
<213> Haliotis tuberculata

<400> 85
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<210> 86
<211> 1209
<212> DNA
<213> Haliotis tuberculata

<400> 86
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<210> 87
<211> 1536
<212> DNA
<213> Haliotis tuberculata

<400> 87
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<210> 88
<211> 591
<212> DNA
<213> Haliotis tuberculata

<400> 88
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<210> 89
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<212> DNA
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<210> 90
<211> 1251
<212> DNA
<213> Haliotis assimilis

<400> 90
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<210> 91
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<212> DNA
<213> Haliotis tuberculata

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<210> 92
<211> 1257
<212> DNA
<213> Haliotis tuberculata

<400> 92
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<210> 93
<211> 1248
<212> DNA
<213> Haliotis tuberculata

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<212> DNA
<213> Haliotis tuberculata

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<210> 95
<211> 1548
<212> DNA
<213> Haliotis tuberculata

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<210> 96
<211> 966
<212> DNA
<213> Megathura crenulata

<400> 96

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<211> 1242
<212> DNA
<213> Megathura crenulata

<400> 97
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<211> 1236
<212> DNA
<213> Megathura crenulata

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<211> 1257
<212> DNA
<213> Megathura crenulata

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<210> 100
<211> 1254
<212> DNA
<213> Megathura crenulata

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<210> 101
<211> 510
<212> DNA
<213> Megathura crenulata

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<210> 102
<211> 942
<212> DNA
<213> Megathura crenulata

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<210> 103
<211> 1248
<212> DNA
<213> Megathura crenulata

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<213> Megathura crenulata

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